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*Pratt, R., & Dufrenoy, J.: Texas Rep. Biol. & Med. *12*:145, 1954.

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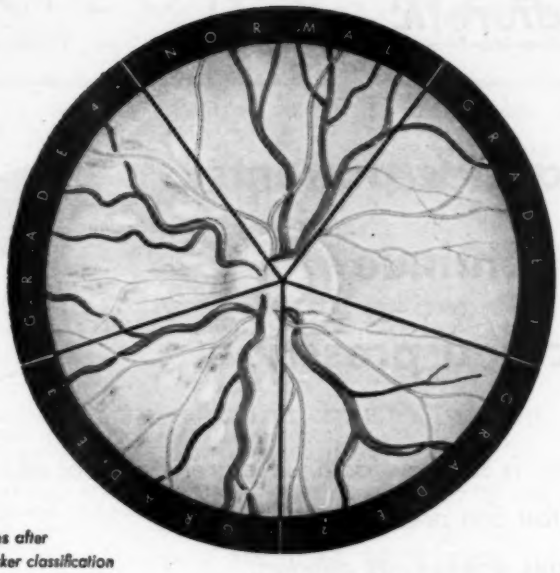

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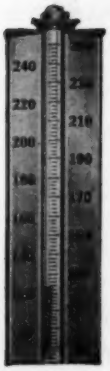

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ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

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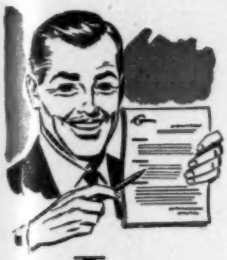

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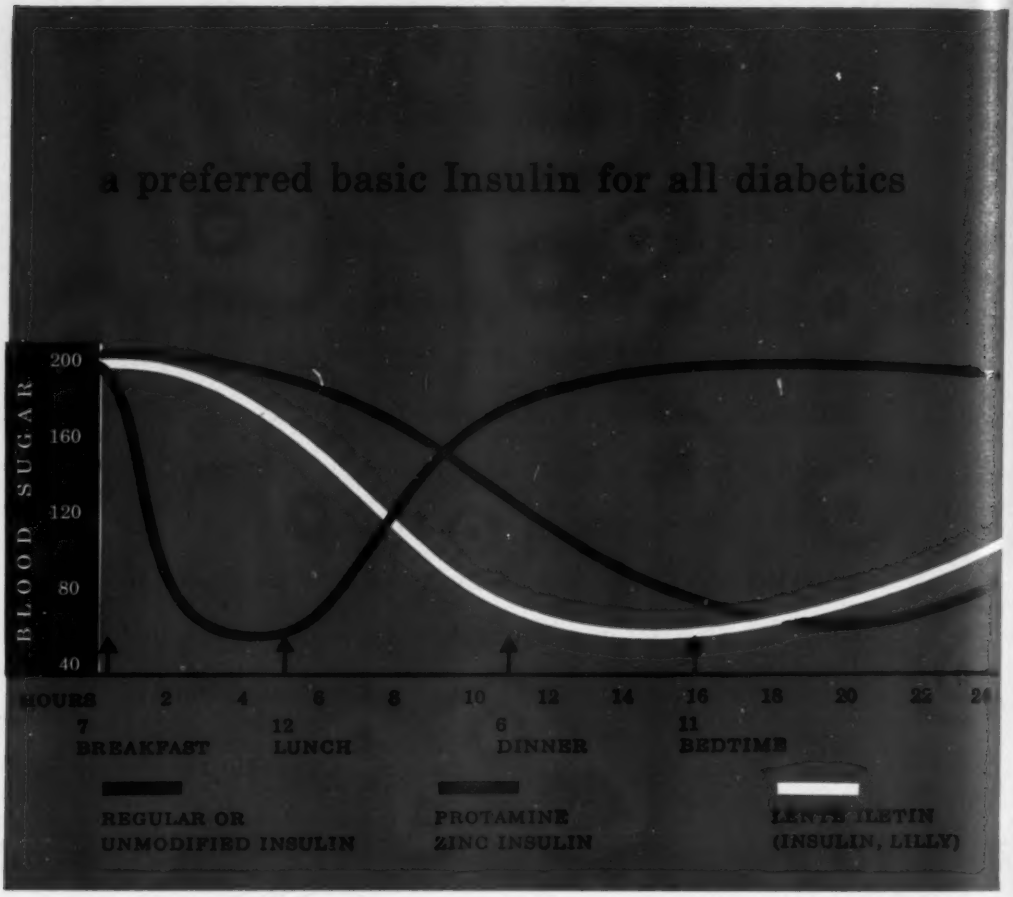

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ARIZONA MEDICINE
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VOL. 12, NO. 4 APRIL, 1955

Original ARTICLES

DUODENAL ULCER: PREJUDICES REGARDING SURGICAL TREATMENT

William F. Quinn, F.D. F.A.C.S.
Associate Clinical Professor of Surgery
College of Medical Evangelists
Los Angeles, California

THESE prejudices and reflections represent those impressions gained during the past 20 years and are part of the satisfaction derived from, as well as at times the anguish associated with approximately 1,000 gastric resections.

Indications for Surgery

The surgeon seldom sees a patient who has not had a reasonable trial of medical treatment. The usual criteria of perforation, hemorrhage and obstruction are too well established to be dwelt upon. The indication of intractability is subject to a good deal of variable interpretation. The surgeon is willing to subject the patient to a certain more or less predictable risk in an effort to achieve relief of symptoms.

A patient with duodenal ulcer of any duration can hardly be expected to respond to medical treatment when his occupation consists of something like driving a bus or streetcar in the intricacies of modern traffic and at the same time is expected to make change, and handle the general public when it is weary, irritable, and belligerent during peak hours of traffic. His hours are erratic, his eating periods are irregular, and his emotions are subject to great stress. He can not afford the time from work and the relaxation incident to satisfactory medical regimen. It might also be stated that on the other hand when he has had an operative procedure he is going back to these stresses and should the procedure not prove satisfactory he promptly returns to the same surgeon.

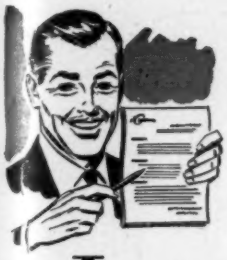
Choice of Procedure and Technical Considerations

Except for certain very limited indications gastroenterostomy and pyloroplasty have not stood the test of time.

Gastric resection has stood the test of time and can be expected to give between 85 and 90 per cent satisfactory results.

Since it took many years to show that gastroenterostomy was unsatisfactory, one must be skeptical about gastroenterostomy with vagotomy. Gastric resection combined with vagotomy may be the final answer. Gastrectomy eliminates the hormonal phase of gastric secretion and permits neutralization and dilution of the remaining gastric acidity and eliminates functioning gastric and duodenal mucosa. Vagotomy on the other hand eliminates the cephalic phase of gastric secretion and thus when combined with resection further reduces gastric acidity. The mortality is not increased and the morbidity is but slightly increased by adding vagotomy to gastric resection and it allows the surgeon to do a possibly more conservative resection. The experience of men doing many resections has been quite consistent. In their first 100 cases the mortality was between 10 and 20 per cent; in the next 100 it would average about 5 per cent and thereafter could be maintained between 1 and 3 per cent.

* Presented before the annual meeting of the Arizona Academy of General Practice, Phoenix, Arizona, Feb. 5, 1954.



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1. Bunim, J. J., Pechet, M. M., and Bollet, A. J.: J.A.M.A. *157*:311 (Jan. 22) 1955.

2. Waine, H.: Bull. Rheumat. Dis. *5*:81 (Jan.) 1955.

3. Herzog, H. L., and others: Science *121*:176 (Feb. 4) 1955.

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Technique

The resection will naturally be the one that satisfies the individual operator. There are numerous satisfactory techniques. My preference is for an anterior polya with an upper right paramedian incision with an exploration of the abdomen and usually if reasonably accessible the appendix is removed before proceeding to the resection. The vessels in the gastrocolic and gastrohepatic omentum are transected and ligated so that 65 to 70 per cent of the stomach can be excised including all of the lesser curvature. The duodenum is freed from the pancreas so that it can be transected below the ulcer. This is the heart of the matter and should be done unless the induration of the tissues is so extreme as to make it unusually hazardous.

As experience is gained one finds that in almost all cases it is possible to get below even the mass the size and consistency of a golf ball and find reasonable duodenum to close below the area. This is best accomplished by lifting the duodenum and freeing it from the pancreas by sharp dissection, cutting through the indurated tissue and ligating such vessels as are cut across. The dangers attendant to this have been somewhat overrated and as experience is gained it is somewhat like congenital anomalies which plague one at first and later become less common. The dangers of injury to the common duct are minimal if the dissection is performed in this manner. My preference has been to transact the duodenum between hemostats and close with a Connell Cushing gastro-intestinal suture after the method of Kehr-Parker, following which a purse string suture is taken to further reinforce the suture line and this usually includes the serosa of the anterior wall of the dodenum and capsule of the pancreas. The crux of the closure is to place serosa to serosa with at least one good layer. The suture material is somewhat unimportant as if healing is going to take place it will within 48 to 72 hours and when blow-out occurs it is due to distension in which case any suture material will cut through the tissues. Non-absorbable sutures may act as a seton and produce fistulas as long as six months after the operation has been performed.

One reason for the zeal in closing the stump below the ulcer has been the unsatisfactory developments when this is not performed. The National Committee on Peptic Ulcer reports that when the ulcer was not removed favorable results were reported in only 65 to 72 per cent and our experience is consistent with that in the literature, in that while many of these patients may be symptom free, the incidence of complications necessitating reoperation in at least 25 per cent.

As to the type of anastomosis performed. The anterior polya was performed in about 75 per cent of these resections and the distal loop of jejunum was placed along the lesser curvature of the stomach. This will avoid a closed loop proximal obstruction which can be a dramatic and usually a fatal complication. If retrocolic anastamosis is performed this complication will not occur but other complications may occur and in general the antecolic anastomosis gives the impression of being less complicated and produces equally satisfactory end results. A two layer gastro-intestinal catgut type of anastomosis is made for when the surgeon performs a three layer anastomosis there is a much higher incidence of edema and obstruction of the stoma presumably due in part at least to the excess amount of suture material. If a one layer anastomosis could be relied upon to control hemorrhage it would probably be adequate as far as healing is concerned and certainly the seromuscular layer is the important one.

About five years ago bilateral vagotomy was added occasionally to resection; the patients selected were those one might term the candidates for marginal ulcers. In other words, they were the worst possible cases and the results were excellent. Since that time the indications for adding vagotomy to resection have been expanded so that about half of the patients have the combined procedure. The results have been satisfactory and the complications minimal, although some will be mentioned subsequently. The experience with vagotomy and pyloroplasty has been minimal but again one wonders about a procedure which did not work out satisfactorily during the twenties and early thirties, although the advocates point out certain advantages, particularly maintaining normal gastro-intestinal continuity. One may wonder somewhat at this approach since the original ulcer naturally developed when continuity was normal.

The problem of the patient with massive exsanguinating hemorrhage is a real one. While a certain amount of nonchalance can be main-

tained on conservative treatment since the mortality rate averages about 6 per cent, it would certainly be wonderful if surgeons could pick the 6 per cent who were not going to respond and salvage most of them. Unhappily, the problem is not a simple one and in reviewing the resections on our services during the last six months at the County Hospital, it was noted that in 26 elective gastrosectomies there was one death, yet 12 resections were done for massive bleeding with 3 deaths, which is a substantial mortality rate.

Naturally if these 12 were ones who would have died on conservative treatment, the results are excellent. The patient with massive undiagnosed hemorrhage presents one of the most trying problems. If surgery is performed the search for the bleeding site may be time consuming and futile and in view of the fact that about 80 per cent of the lesions causing bleeding will be in the lower portion of the stomach and the first 3 centimeters of duodenum, possibly the philospohy of a quick resection without much exploration is justified. One patient who received 26 transfusions within 24 hours and never recovered from shock enough to justify exploration. At autopsy with complete exposure it was not until the stomach was examined with a hand lens that one discovered an acute gastric ulcer the size of an ordinary kitchen match with an artery protruding from the center of it. Another was a similar case in which there was a proven duodenal ulcer and at the time of resection an area of questionable thickening was felt somewhat high on the lesser curvature and resection was extended to include this area. When the stomach was examined, it was discovered that while the patient had an active duodenal ulcer, the bleeding point was in the high gastric ulcer. A less satisfactory case was a man with a proven ulcer with four massive hemorrhages on whom resection was done during the fifth massive hemorrhage. An ulcer of the duodenum was present but the patient continued to bleed and succumbed 48 hours postoperatively and at autopsy a cirrhosis of the liver was found with bleeding from esophageal varices. It is astonishing how frequently, when the jejunum is examined during the course of a routine resection that multiple telangectatic hemangiomas are found and yet the patient appears completely cured of the existing ulcer by the resection. The important point naturally is that these be described in the operative reports so that should hemorrhage occur at a later date the surgeon will know the possibility at least of one source.

Complications

The usual complications incident to any operation will not be covered here. The complications which could have been prevented may prove of more interest. One case is that of a 46 year old woman with a bleeding ulcer, having had symptoms for many years and four episodes of severe hemorrhage. She had a marked hypertension normally and had had a nephrectomy about ten years previously. In an effort to avoid numerous transfusions under these circumstances, a quick resection was performed, some difficulty being encountered is freeing the ulcer and in closing the duodenal stump. Recovery was satisfactory until the sixth postoperative day when there was sudden agonizing pain in the right upper quadrant associated with leukocytosis and mild fever. The probability of duodenal stump blow-out seemed reasonable and on reoperation the patient was found to have acute cholecystitis with cholelithiasis and cholecystectomy was performed.

Zeal in efforts to perform a quick resection resulted in neglecting the dictum that a quick look is better than a finesse and the usual palpation of the abdomen was omitted. Since that time gall stones associated with duodenal ulcer have found in 12 patients and in most of whom cholecystectomy was performed in addition to the resection. The removal of the appendix at the time of the surgery may save the surgeon some slight embarrassment as there were two instances, wherein, the appendix seemed somewhat inaccessible and was not molested and within 3 months the patient had to be reoperated for acute gangrenous appendicitis. Another illustrative case was that, wherein, the patient had the expected ulcer but routine palpation of the abdomen revealed an asymptomatic carcinoma of the cecum which was resected and the gastric resection performed at a later date.

The complication of diarrhea following vagotomy is usually limited to the first 4 to 6 weeks but in 2 instances persisted to the extent of being inconvenient for about 6 months. It might be noted that in selecting the patients in whom vagotomy and resection was performed most of them were the extremely constipated type of individuals.

The dumping syndrome of a serious nature occured in about 4 per cent of the patients and was not related to the type of procedure performed, in other words it occured in about the same proportion in posterior Polyas, anterior Polyas, or posterior-anterior Hoffmeister procedures. The general feeling is that the symptoms are produced by rapid dilatation of the jejunal loop due to flooding with liquid food. The picture is paradoxical in that one author reports decreasing the incidence when he changes from a Hoffmeister to a Polya procedure, and another reports just the opposite. Some 30 years ago a somewhat similar syndrome was described as the gastroenterostomy disease. All cases studied had marked weight loss and hypoglycemia, high glucose tolerance curves with a transient lowering serum potassium levels secondary to rapid binding of potassium inside the glycogen storing cells and also lowering of the blood phosphorus levels. Response was satisfactory under the treatment of a competent internist. The treatment consisted of high protein, low carbohydrate diet and Cortisone 25 mg. T.I.D. for the effect of raising blood-sugar levels plus the possible suppressive effect to the endocrine system of the release of epinephrine-like substances. Testosterone proprionate for its anabolic effects since Cortisone is catabolic and the patients were already in negative nitrogen balance. Potassium chloride grams 1 T.I.D. was given to counterbalance any fall in serum potassium levels secondary to Cortisone administration, multiple vitamins including folic acid for general supportive therapy and thyroid to several patients with evidences of thyroid deficiency. Two patients were given Sorolate in addition to the above to improve fat absorption. All patients were rapidly relieved of symptoms and gained an average of 20 pounds within a period of 3 months. One female patient had some edema which responded in lowering the dosage of Cortisone. Most patients can be taken off therapy in 3 or 4 months without loss of weight or return of symptoms.

In summarizing these patients, it was noticed that the incidence did not vary with the type of resection performed nor with the addition of vagotomy but the constant factor in all cases was a hyper-reactor type of individual and treatment of correcting the disturbed metabolism was successful in bringing about weight gain and relief of symptoms.

Postoperative care consisted of regulation of electrolyte balance and in cases of vagotomy the upper gastro-intestinal atonia which frequently was present. The results have improved considerably in the last few years with the use of the plastic suction feeding tube developed by Kaslow. The tube consists of a routine plastic Levine tube with a smaller plastic tube threaded inside of it. This smaller tube is maneuvered into the distol jejunum for a distance of about 2 feet below the stoma, whereas, the other tube is cut off in the region of the stoma. A continuous drip is then administered through the tiny tube and after a trial of many combinations of materials the most satisfactory was found to be Calorigen, which runs freely and is absorbed easily and contains a well balanced nutrient formula. The drip is started immediately upon the patient's return to his room and is maintained at the rate of one liter every 8 hours. Suction is kept on intermittently every two hours on the other tube. Care must be taken to fasten the tube securely in the nose so the patient does not inadvertently reach up and pull the tube from his nose upon awakening. This would be of no consequence ordinarily but in about 10 per cent of the cases the feeding tube is pulled up into the stoma and the Calorigen then siphoned off as fast as it is given. If this possibility exists a pinch of methylene blue is added to the solution and if it promptly returns in the suction parenteral fluids must then be administered. The place for food is in the gastro-intestinal tract and not in the veins and it has been gratifying to see the early return of peristalsis associated with this regimen. This is particularly true in those patients in whom vagotomy was performed as it would appear that presence of food in the G.I. tract stimulates the whole tract and the postoperative atonia has been almost absent. Occasionally the fluid will not absorb at this rate and distention is noted and then parenteral fluid must be given in addition. There is usually passage of liquid stools on the third or fourth day and the tube can be removed and a soft diet ordered. Early ambulation is routine and the average hospital stay is 8 days.

Patients are encouraged to get over their gastric neurosis and eat anything they care to and in general can eat without restriction except for the fact that for the first month they must

eat 4 or 5 small meals a day instead of 3 large ones.

Results have been excellent in 85 per cent of the cases and satisfactory in 95 per cent. The occasional patient with dumping syndrome as noted needs further treatment and there are many who are symptom free and are able to carry on an energetic way of life but do not gain weight. Very few patients have developed anemia and these responded well to pulverized iron given on an empty stomach before bedtime. Happily marginal ulcer developed in less than 1 per cent of the patients and in none in whom vagotomy was added to the resection. In the 5 per cent classified as poor results were those who were continually concerned with the feeling of gas and pressure in the stomach, but on whom studies revealed no positive findings.

It might be of more than passing interest that a high percentage of these were veterans who may have had some interest in obtaining a disability rating. In any event it is a source of satisfaction to the surgeon when patients who have had surgical treatment for ulcers continue to send their friends with ulcers in for similar treatment. The internist may control the patients satisfactorily but the regimen he places them on may not always be to the patients' satisfaction, whereas, the surgeon at least has the advantage of being able to tell his patient to lead a reasonably normal life, and those in whom this is not possible he can send back to the internist, usually in condition not worse than prior to operation.

THE LABORATORY STUDY OF THYROID FUNCTION

Marcy L. Sussman, M.D.
Phoenix, Arizona

THE thyroid is the only gland in the body which secretes a hormone, stores it outside the cells and releases it into the circulation as it is needed. The gland is responsive to a variety of stimuli which the organism as a whole encounters during life. Such, for example, are puberty, pregnancy, the amount of iodine and possibly other specific compounds in food and water of a particular geographical locality, extremes of environmental temperature and nervous strain. Many of these stimuli are regulated through the pituitary and the adrenal glands. Because of the lability of the thyroid and its great responsiveness to stimuli, it is difficult to define what is the normal gland. By the same token, it is usual to find some variation in the results of repeated tests on the same patient. Furthermore, dysfunction occurs not only as a quantitative change in normal functions but also as a qualitative alteration in iodine metabolism(1). It is not surprising therefore that thyroid function cannot be established by a single test and, much as one selectes from the battery of available liver function tests those which might clarify the individual problem, so a selection must be made in regard to the thyroid. There are several rather distinct mechanisms involved in the function of the thyroid gland and of its hormone which occur in the following sequence:

a. Extraction of iodide from the blood stream.
b. Synthesis of thyroxin.
c. Storage of the hormone as thyroglobulin.
d. Discharge of the hormone into the blood stream.
e. Utilization of thyroxine by the tissues and its influence on general body metabolism.

These mechanisms will also be influenced if hormone excretion is delayed, or if there is an unusual production of thyroid-stimulating hormone (TSH) by the pituitary. A special situation is created by the presence of thyroid nodules as contrasted with a diffuse hyperplasia. Most of these mechanisms can be studied in the laboratory and the available tests will be described with illustrative cases.

IODINE UPTAKE

The ability of the thyroid to take up iodide from the blood is studied best by the use of the radioactive isotope, I 131. This material which can be given orally in very small amounts of activity for ordinary tests, radiates a gamma ray which can be measured by placing a suitable detector over the gland. In order that the dosage of I 131 be kept small, the detector must be sensitive and efficient and the recording apparatus must be accurate. We use a collimated scintillation detector in front of the neck and recording is done with a scaler. The radiation in the thyroid is compared directly with a reference standard of an amount of isotope equal to the

oral dose and kept the same length of time so as to compensate for physical decay (the half life of I 131 is 8 days). Care must be exercised to duplicate the geometry when making these comparisons because slight changes in position or in distance create considerable change in the recorded radiation. In some laboratories, a single uptake determination is made 24 hours after the test dose has been given when, at least in the euthyroid patient, the maximum amount of I 131 has been trapped by the thyroid. However, we prefer to make observations at 6, 8 and 24 hours (and 48 hours in the suspected hypothyroid). This establishes the rate of uptake and can be used, if desired, to determine clearance and accumulation rates(2). The hyperthyroid traps iodide much more quickly than the euthyroid and in a severely toxic case, the maximum uptake may be reached much before 24 hours so that a single determination may not give a true picture of the clinical condition. It is sometimes helpful to repeat the procedure using intravenous administration of the test dose and repeated testing to establish the rate of uptake.

The boundary between normal and abnormal 24 hour I 131 uptake is not sharp. In the series published by Werner, Quimby and Schmidt(3), if the division between euthyroid and hyperthyroid is set at 35%, 94% of hyperthyroid patients were above this figure, 90% of normals were below. Most hyperthyroids had uptakes less than 10% but a few reached 30%. Because the division is not critical, additional testing often is required as will be indicated below.

Iodine uptake is influenced by previous medication. Thiouracil derivatives or other antithyroid drugs must be stopped at least 96 hours before the test. Inorganic iodide which usually has been given in the form of Lugol's solution, reduces the I 131 uptake for about three weeks and sometimes up to seven weeks. When Lugol's has been given, it is wise to procede the uptake study with daily doses of potassium thiocyanate, grains three, enteric coated, for two weeks and allow one more week before testing. This drug washes out the inorganic iodine in the thyroid. Thyroid medication also depresses the uptake, an effect which lasts for weeks. Organic iodinated compounds such as those used for urography, cholecystography, bronchography and myelography may produce a low uptake for months. Some foods such as kelp, rutabaga and cabbage may have a depressing action. Potassium thiocyanate, sulfa drugs, cortisone and mercuhydrin are other drugs which depress uptake.

Case 1. Lowered BMR, Not of Thyroid Origin

Female, age 37 years, has been taking thyroid medication (3 grains a day) for many years following the discovery of a "low" BMR. The patient was unwilling to refrain from the medication for any length of time so that an uptake study was done one week after stopping the medication, rather than the preferred three weeks. After a tracer dose of I 131, an uptake of 24 per cent at 8 hours and 30 per cent at 24 hours was established. Urinary excretion in 24 hours was 50 per cent (the 14 per cent not accounted for is distributed elsewhere in the tissues and some similar quantity is usually not accounted for in the thyroid and urine). A PBI determination showed 7.7 gamma per 100 ml. It is evident that this lady is not hypothyroid. The readings are "high normal" which might be even higher if there is any residual depression by the thyroid medication. It is important to note, however, that the medication in this case is not necessarily a therapeutic error but its use must be regarded as pharmacodynamic and empiric(4) rather than the correction of a deficiency. At the same time, it is well to bear in mind that thyroid hypoplasia may be produced by repeated large doses of thyroid(5).

Case 2. *Thyrotoxicosis Factitia.

Female, age 29 years. This patient gained a great deal of weight after her second pregnancy and was treated with reducing pills of unknown composition. Her weight fell from 170 to 130 lbs., at which time she stopped taking the pills. Three months later, she discovered that her husband was being unfaithful. During the following month, she lost 28 pounds more and developed a ravenous appetite. On examination, the eyes were normal, the thyroid was not felt, blood pressure 150/60, pulse 144. There was a marked tremor, marked perspiration, and a loud systolic murmur at the base of the heart. BMR was plus 72, PBI 16 gamma %. The I 131 uptake was less than 1 per cent. The patient denied taking any medication. When the diagnosis of thyrotoxicosis factitia was made, she consulted another physician who undertook to prepare her for surgery with propylthiouracil. She took 300 mg. daily for a month, then 500 mg. daily, and ultimately, 90 mg. of tapazole a

* Some of these cases were seen in New York and are quoted with deep appreciation to Dr. S. Yohalem who gave permission for their use.

day. There was no improvement and the PBI rose to 26 gamma %. At this point, she was hospitalized and, after two weeks of daily psychiatric consultation during which she continued to deny that she took medication, she finally admitted taking two 5 grain tablets of thyroid daily. This case, then, illustrates the unique ability of uptake studies to differentiate thyrotoxicosis factitia.

Case 3.

Differentiation From Pheochromocytoma.

Male, age 38 years. This man complained of weight loss, sweating which seemed to come in waves, anxiety, irritability and headaches for six months. The BMR was plus 42, PBI 6.9 gamma %, I 131 uptake 30 %. The PBI 131 (which will be described in more detail in the next section) was 0.12% per liter. These findings excluded hyperthyroidism. A pheochromocytoma was then suspected and sought by provocative histamine test which was positive and a tumor was then removed from the right adrenal.

Case 4.

Thyroiditis Simulating Thyrotoxicosis.

Female, age 51. Relatively sudden onset of palpitation, weight loss and anxiety two weeks after a severe cold with sore thoat. There has been some pain in the neck on yawniqg, but at no other time. She lost 8 pounds and was advised by her physician :o vacation. She felt much worse during this period and consulted another physician. The BMR was plus 25 and PBI 14 gamma %. Physical examination revealed a pulse of 120, blood pressure 140/75, 2 plus tremor, moist skin, normal eyes and a firm non-tender bilateral goiter without bruit weighing an estimated 40 grams. Thyroidectomy after preparation with thiouracil was advised but before the medication was started the I 131 uptake was found to be 2 per cent. The diagnosis was was revised to sub-acute thyroiditis with pseudohyperthyroidism. The patient was treated with conventional x-ray therapy receiving 600 r during four weeks. The symptoms disappeared, the BMR fell to minus 3 per cent and the PBI to 6.0 gamma %.

THE CONVERSION OF IODINE TO THYROID HORMONE

It has already been indicated that uptake studies alone may not suffice to establish or exclude hyperthyroidism. The investigation of thyroxine synthesis provides a further refinement. Thyroidal iodine is composed of a freely-dialyzable inorganic fraction and a non-dialyzable organically-bound fraction. The former can be discharge from the gland by an excess of thiocyanate ion, the latter cannot. Binding iodine into the organic molecule is an essential part of the synthesis of thyroxine(4). It can be blocked by drugs of the thiouracial group. Trapping if iodine by the thyroid and iodination of tyrosine are distinct mechanisms. It is thought that the iodide in the blood stream reaching the thyroid is oxidized to iodine with the aid of peroxidase. The iodine is combined immediately with tyrosine to form monoiodotyrosine, then diiodotyrosine. Triiodothyronine also is present in the gland in small amounts. The next step, conversion of diiodotyrosine to thyroxin also is promoted enzymatically.

Except for radioautographs of tissue removed surgically, the blood is the only tissue in which these mechanisms can be studied. Chemical and/or isotope technics can be used.

PROTEIN BOUND IODINE IN THE BLOOD

The chemical determination of the protein bound iodine (PBI) in the serum is probably the most easily applied test as far as the patient is concerned involving merely the withdrawal of a blood specimen. There is a certain lack of sensitivity because the technic is critical but this may be minimized by scrupulous care and experience. Iodinated substances such as gall-bladder and kidney "dye" result in high values which may persist for months. The level also is modified by pregnancy and nephrosis: a low serum albumin may depress the PBI to 2 gamma %. There have been many reports of what constitutes the normal PBI range. Thus Kydd, Man and Peters(7) found a range of 3.8 to 8.6 gamma % with an average of 5.4 (standard deviation, plus or minus 0.94). The tabulations prepared by Starr(8) is convenient clinically:

Very low	0 – 2 gamma %
Low	2 – 3
Subnormal	3 – 4
Low normal	4 – 5
Normal	5 – 7
High normal	7 – 8
Super normal	8 –

PROTEIN BOUND I 131 IN THE BLOOD.

The chemical PBI level in the blood, is, in a sense, the expression of the "resting" state. By isotope technics it is possible to follow a given dose of iodine into the blood stream. The simpl-

est procedure is the determination of the activity of the plasma, 72 hours after the tracer (all blood activity must be measured with a well-type detector). Levels less than 0.26 per cent of the administered dose per liter of plasma excludes hyperthyroidism(14). When the total plasma activity exceeds 0.26 per cent, it is necessary to precipitate the protein bound I 131. PBI levels greater than 0.26 per cent indicates hyperthyroidism. The test is not critical for hypothyroidism.

Somewhat more elaborate tests have been devised and the conversion ratio as studied by Dwight Clark(9) and by Morton (10) seems to be a true function of hormone production. This ratio is expressed as:

$$\frac{\text{PBI 131}}{\text{Total plasma I 131}} \times 100$$

In 150 cases, Clark reports very little overlap between proven hyperthyroids and euthyroids. Clark did not think the ratio diagnostic of hypothyroidism. Morton, using a butanol extract obtained diagnostic results in 93 per cent of his hypothyroid cases. We also use a butanol extract* since this extracts only the thyroxine which however is proportional to the PBI 131. Morton found the normal range of the conversion ratio to be between 2 and 10 per cent. A chromatographic study of the iodine-containing fractions of the blood may be of considerable value in the investigation of qualitative differences that are found in disease(11) and we* also are pursuing this type of study.

THYROID STIMULATING HORMONE

In the study of hypothyroidism, the response to TSH is of considerable importance. TSH concentrations in the blood have been assayed biologically but the technic is not yet firmly established. However, based on PBI 131 technics following TSH stimulation, Wilkins, Clayton and Berthong(13) arrived at an etiological classification of hypothyroidism which, in a summarized form, is as follows:

A. Congenital (Cretinism)
   1. Embryonic defect in development.
   2. Lack of iodine (endemic cretinism)
   3. Congenital goiter.
   4. Inability to convert iodine into thyroxine.

B. Acquired (Juvenile hypothyroidism)
   1. Primary atrophy of the thyroid.
   2. Specific deficiency of thyrotropic hormone.
   3. Secondary to general pituitary deficiency.
   4. Operative removal.
   5. Thyroiditis, Hashimoto struma etc.

Starr(8) gives the following quantitative summary:

Thyroid Status	I 131 Uptake Before TSH	After TSH
Euthyroid	14. %	46. %
Euthyroid receiving thyroid medication	6.5	44.
Euthyroid receiving thyroxine	15.	53.
Secondary hypothyroidism	14.	55.
Primary hypothyroidism	7.	10.
Primary hypothyroidism treated with thyroid	2.	2.5

A further test which probably will be of value is to create a physiologic TSH hypophysectomy with a single oral dose of triiodothyronine(12) and to follow this with I 131 uptake studies.

URINARY RETENTION.

The urinary excretion of iodine is subject to considerable variation. The difficulty of having patients keep 24 hour samples also contributes to error. However, activity measurements on successive samples may be helpful in diagnosis and are said to aid in the diagnosis of thyroid cancer(15). Urinary insufficiency whether primary or secondary to cardiac failure will result in abnormal retention of iodine. In the euthyroid where the uptake is about 30 per cent, the 24 hour urinary output is about 50 per cent. Readings as low as 20 or even 15 per cent are found in hyperthyroids and excretion occurs at a more rapid rate. It is our practice to do urinary studies as a check on the uptake and to detect a false result due to urinary insufficiency. We have not had the opportunity to study a thyroid cancer before operation to evaluate the reported altered rate of excretion in this disease.

*TISSUE UTILIZATION OF THYROXINE

Several metabolic effects of thyroxine can be studied in the laboratory and indeed, until the advent of I 131, these were the main avenues of exploration of thyroid function. The oxygen consumption, recorded usually as the basal metabolic rate (BMR) is increased in hyperthyroidism, decreased in hypothyroidism. The test is technically diffciult in many nervous patients, impossible in some. It is not specific. The rate may be low in starvation, malnutrition, certain

* The PBI determinations, PBI 131 extractions and chromatographic analyses perfrmed on patients seen in Phoenix were made at the Diagnostic Laboratory, Phoenix (Director, Dr. M. Rosenthal) by E. Wilson, M.Sc., to whom thanks are accorded for his untiring assistance.

types of obesity, Addison's disease and lipoid nephrosis. It may be elevated in diabetes insipidus, leucemia and polycythemia. The serum cholesterol is often low in hyperthyroids, elevated in hypothyroid states; the correlation is not good. The urinary creatine, carbohydrate metabolism, growth and the cardiovascular system are studied with advantage. More often, it is abnormalities in one or more of these symptoms which lead to thyroid function studies.

The metabolic effects of thyroxine are probably mediated through triiodothyronine. This observation lead to a recently suggested test for hyperthyroidism(16) in which the effect of this drug on I 131 uptake is utilized. In euthyroids, there is a sharp decrease in the 24 hour uptake so that no value exceeded 20%. In toxic goiter there was no significant drop and no value under 35% was encountered.

CASE 5. HYPERTENSION WITH ADDED HYPERTHYROIDISM

Female, age 59 years. Known hypertensive for 12 years without congestive failure. ECG showed left ventricular hypertrophy. There was constant anorexia, severe headache and occasional palpitation on severe effort. For about a month, she became increasingly irritable and cried without apparent cause. Two months prior to this, her son was sent to Korea. One night she was seized with severe palpitation and a physician found auricular fibrillation which finally became fixed.

I 131 studies showed an uptake of 89% and a PBI 131 of 0.46% (the normal is less than 0.26%). The diagnosis of masked hyperthyroidism superimposed on hypertensive heart disease was made. She was treated with 2.5 mc of I 131. Within 2 months, the rhythm was regular, her weight increased 12 pounds and the BMR dropped from a previous level of 23% to 6%. The I 131 uptake after 2 months was 31%. The hypertension was not affected.

TOXIC ADENOMA

Since the advent of I 131, there is no longer any doubt that oversecreting tumors may occur in the thyroid which are etiologically different from the overactivity of the whole gland in Graves disease. The life history of these adenomas has been worked out(4) and some are found which produce thyroid hormone from birth. At first, the tumor is small and contributes little to the functional totality. However, the tumor may grow out of control and contribute more and more hormone. Frequently, the tumor comes to contribute more hormone than the normal part of the thyroid. Finally the tumor functions autonomously, the normal part of the thyroid becomes atrophic and the patient hyperthyroid. In Graves disease, so far as is known, the pituitary retains its control over thyroid function. The detection of "hot" nodules – nodules that take up iodine brisky – is within the exlusive province of I 131 technics. A directional detector tube is required to scan the entire thyroid gland and superior mediastinum. By use of a highly collimated tube, almost continuous surveys of thyroid tissue can be made either manually or automatically. The manual scan, while more time-consuming, gives a somewhat more quantitative result, and this is the procedure we currently employ. This study is of considerable importance and should be made routinely in the presence of one or more nodules because of the relatively high incidence of cancer particularly in single nodules. If a nodule is "hot", the chances are that it is not malignant but the finding does not exclude cancer. (4) Contrary-wise, a "cold" nodule must be regarded with a considerable suspicion of malignancy.

CASE 6. SINGLE FUNCTIONING NODULE.

Female age 41, known to have a "low BMR" for many years. Previous PBI determinations yielded values between 3.4 and 4.0 gamma %. The patient has been taking no medication. There have been no symptoms. Following a tracer dose of I 131, an uptake of 6% was found at 8 hours and 7% at 24 hours. The urine excretion was 81% in 24 hours. The PBI at this time was 3.6 gamma %. The patient has been aware of a plum-size nodule in the thyroid for at least 15 years which swells at times but promptly responds to small doses of iodine. On palpation, the nodule was found in the right lobe of the thyroid, the gland was not otherwise enlarged. A scan recorded a relative activity of 17 over most of the gland but 28 over the nodule indicating moderate function of the adenoma. These figures are not to be taken as precise indications of the function of the nodule because there was a greater volume of tissue under the detector tube when it was placed over the nodule. Whether this functioning adenoma is the cause of the reduced function of the normal part of the gland is debatable but serial observation is evidently required. By the same

token, we are not as seriously concerned with the possibility of malignancy in this nodule as we would be were it "cold."

CASE 7. ANXIETY STATE ASSOCIATED WITH NON-TOXIC GOITER.

Male, age 34 years. Known goiterous for 10 years. Relatively sudden onset of anxiety, palpitation, perspiration, occasional chest pain and weight loss. Physical examination showed a nodule in the left lobe of the thyroid, without bruit, a pulse of 106 and a coarse tremor. BMR was plus 45 and plus 41. The I 131 uptake was 28% and the PBI 131 0.06%. A manual scan of the goiter showed it to be essentially non-functioning.

SUMMARY

The laboratory tests available for the study of thyroid function are discussed. A discussion of which test is "best" is inconsequential since these tests measure different functions and are complementary. However, there is justification for the conclusion that, in suspected hyperthyroidism, the BMR is least informative. We recommend that both the PBI and I 131 uptake be performed. In hypothyroidism, the PBI and I 131 uptake also are the more useful, particularly when they are repeated after a dose of TSH. However, the BMR will sometimes define a group of patients who are not hypothyroid but benefit from thyroid medication.

In the case where these tests give equivocal results, study of the PBI 131 conversion ratio is recommended. Whether chromatographic analysis will be of clinical value is not yet determined. The thyroid "scan" is an essential procedure in the presence of a thyroid nodule and in post-thyroidectomy thyrotoxicosis and suspected cancer.

PBI and I 131 uptake studies are essential in cardiovascular patients suffering from auricular fibrillation of unexplained etiology and certain instances of hypertension, to uncover masked hyperthryoidism. It need not be emphasized that preliminary uptake studies are essential when I 131 therapy is to be given to patients suffering from intractable recurrent heart failure. The production of a medical thyroidectomy in these euthyroid patients is quite a different problem from the treatment of masked hyperthyroidism. This matter is of considerable importance since there is increasing evidence that the prolonged use of thiouracil drugs is of much more potential harm than treatment with I 131.

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MASSIVE GASTROINTESTINAL HEMORRHAGE DUE TO PEPTIC ULCER*

Bernard M. Lipschultz, M.D.

Phoenix, Arizona

IN THE past half century the treatment of bleeding peptic ulcer has undergone many modifications. Prior to the development of blood banks and readily available blood, treatment was directed primarily to control of gastric acidity. The earliest management was a starvation regimen to rest the stomach, in some cases combined with intubation to aspirate acid secretions, which might digest a clot. After a short period of starvation, patient would be given a diet of milk and cream, bland foods with alkali powders. Mortality studies with this management were widely discrepant as Manheim in 1926, reported a mortality of only 4.2%, but Chiesman in 1932 reported mortality as high as 25%. Although early feeding was recommended by Lenhartz in 1904, and modified later by Andresen(1) in 1927, it was not until 1933 that the Meulengracht diet which consisted of liberal pureed feedings including meat became widely accepted.

In 1947, Meulengracht(2) reported a mortality rate of 2.5% in his series of 1,031 patients treated by this regimen during the preceding 15 years. This group, however, included hemorrhage of all grades of severity, all origins, and not exclusively peptic ulcer.

About the same time that Meulengracht advocated conservative treatment with a free-feeding program, Finsterer(3), a Viennese surgeon, came out strongly for immediate gastric resection in an attempt to salvage such bleeding cases that seemed to be uncontrolled on immediate conservative therapy. In this country, Stewart et al(4) carried Finsterer's idea even more energetically, advising immediate operation on all patients with acute massive hemorrhage. However, the tendency at present in such cases is a short trial of medical therapy, as recommended by Heuer(5), although what constitutes a short period of treatment has not been entirely settled.

With the rapid accessibility of blood for transfusion, there has been sufficient data accumulated from major hospitals, to more adequately study the results and standardize certain procedures. The developments of anesthesiology have made gastric surgery safer and the results are more assured. Nevertheless, differences of opinion do exist on management of bleeding peptic ulcer, although most authors are agreed on a liberal feeding program and the administration of blood in large amounts. However, even in the matter of liberal usage of blood, Pollard and Wollum(6) stated that it should not be given unless definite shock exists or hemoglobin falls below 50%. Former standard dictums, such as large transfusions blowing out the clot, bleeding will stop when blood pressure is low enough, and no patient ever died of first hemorrhage, for the most part have been proven false and disregarded. The question as to the optimal time for surgery has not been settled. Meulengracht believes all patients should be treated conservatively. Heuer believes operation should be done after 48 hours if medical management fails. Stewart et al, believe that operation should be done immediately on all patients with acute massive hemorrhage.

TABLE I

Classification Of Upper G.I. Hemorrhage

Duodenal Ulcer	56
Gastric Ulcer	5
Stomal Ulcer	1
Gastritis	6
Carcinoma of Stomach	1
Esophageal Varices	11
Other	
Hiatus Hernia	2
Passive Congestion	1
Leiomyosarcoma of Jejunum	1
Unknown	7
	91

At the Veterans Administration Hospital, Phoenix, Arizona, during the preceding two and one-half year period, 91 patients with massive upper gastrointestinal bleeding were admitted (Table I). In 62 cases or 68% of these patients, hemorrhage from peptic ulcer was diagnosed. Gastric ulcer accounted for five cases (5.5%), and stomal ulcer was diagnosed in two cases, or 2% of the total. Treatment was instituted on the Medical Service under the close observation of the Internist and the Surgeon, and

*From Veterans Administration Hospital, Phoenix, Arizona.

the result obtained was the outcome of close cooperation on the part of the two services. An attempt was made to establish the exact diagnosis and etiology of bleeding in all cases. The history emphasized the duration of ulcer symptoms, number of previous bleeding episodes, quality of previous treatment, extent of alcohol consumption, previous surgical experiences related to peptic ulcer, and also results of previous x-rays. The condition of the patient was evaluated as to clinical signs of air hunger and peripheral vascular collapse. The presence of arteriosclerosis or other co-existing disease was carefully investigated. Blood pressure and pulse rate determinations were taken at the time of admission, and repeated as necessary every one to four hours. Hemoglobin and hematocrit determinations were done immediately and blood drawn for typing and cross-matching. The hematocrit and hemoglobin were repeated as indicated, usually at intervals of 6, 8, or 12 hours. Bleeding, clotting time, prothrombin time, and platelet counts were not done routinely unless a blood dyscasia was suspected.

Patients were placed at absolute bed rest, in a flat position, or if in shock, with the foot of the bed elevated. Dietotherapy was immediately started with a modified Meulengracht diet, with two drams of a colloidal aluminum hydroxide preparation given after each feeding. At the discretion of the physician, additional small feedings and medication were given during the night. This regimen provided a sufficient nutritional intake, in addition to being an effective buffering diet. Within one to two days after definite evidence that the bleeding had subsided, the diet was increased to a bland, low-residue diet, with between-meal feedings. The use of anticholinergic drugs, together with necessary sedation was left to the discretion of the physician.

The liberal and early use of blood transfusions is one of our most important phases in medical management. Sufficient blood is given to raise the hemoglobin to 70%, with at least two units of cross-matched blood in reserve at all times during the active bleeding episode. The 70% hemoglobin was arbitrarily set as it provided sufficient blood to avoid anoxia and preserve bodily functions, as well as providing for an adequate margin of safety if recurrent bleeding ensued.

On basis of the immediate clinical evaluation and response of patient to therapy, these patients were classified in accordance with Dunphy and Hoerr's(7) criteria (Table II).

TABLE II

Classification

(Dunphy and Hoerr Criteria)

Group I – Moderate	27
Occasional syncope with onset	
No disturbance of circulatory stability	
Group II – Severe, Compensated	50
Bled 500-1000 cc. daily	
Circulation stable	
Group III – Severe, Decompensated	12
1000-1500 cc. lost daily	
Shock only prevented by 500 cc. blood every 8 hours or sooner	
Group IV – Exsanguinating	2
1500 cc. or more daily lost	
Shock persists	
	91

Thus, patients who had evidence of peripheral collapse in spite of rapid replacement therapy, were classified as exsanguinating. The group that had a general improvement from immediate transfusion and a schedule of 500 cc transfusion every 8 hours or less, and who presented an increase in the hemoglobin and hematocrit were classified as "moderate." That group which showed a stationary hemoglobin and hematocrit in spite of transfusion, was classified as "severe - compensated," implying that the rate of blood loss was equal to rate of transfusion, or approximately 1500 cc a day. Finally, there was that group which, without clinical evidence of shock, and on a schedule of 1500 cc of blood per day, showed a falling hemoglobin and hematocrit. These were classified as "severe – uncompensated." The greatest number of cases was in the severe compensated group, 50 patients (55%), with only 2 in the exsanguinating category (2%).

The prognosis of hemorrhage in any individual case was difficult to establish early. Many authors consider the first 72 hours as the critical period. If after the first massive hemorrhage, bleeding ceased, prognosis was excellent. However, if recurring bouts of bleeding continued, prognosis was increasingly poor.

Crohn and Janowitz(8), in reviewing large series of reported cases, had shown a mortality rate of 6.9%, with massive hemorrhage under medical therapy, and those treated surgically within 48 hours, had a mortality rate of 10.5%. With intractable bleeding, where surgery was

performed as late as three weeks following the onset, the mortality rate increased to 24.4%. Saltzstein, Mahlin and Scheinberg(9) reviewed 343 cases of bleeding peptic ulcer at Harper Hospital, Detroit, between 1947 and 1951. Of these, 80% were treated medically, with a mortality of 5.15%. Half of these deaths occurred in mild bleeders, several of whom had associated cardiovascular conditions. In many of these cases the anoxia of gastrointestinal hemorrhage may have precipitated cardiovascular accident. The remaining 20% were treated surgically with four deaths or a 5.9% mortality. In their study they also pointed out that hematemesis had a more serious prognosis than melena alone, as observed in the earlier reports by Meulengracht. However, in the above series, only 10% of their patients were in the exsanguinating group, with the overall mortality of 5%. This compared favorably with Gott, Smith and Dornan's(10) review of 195 cases at the Veterans Administration Hospital, Louisville, Kentucky, with an overall mortality of 5.6%. Twelve per cent of their patients were operated on within a four-day period. However, statistics concerning this problem were often misleading, as in the medically treated cases those cases ultimating in surgery, were excluded from their series. Warthin et al(11) at the Veterans Administration Hospital, Boston, Massachusetts, in their 184 peptic ulcer patients encountered 6 deaths on a combined Medical-Surgical-Radiological team management, with a gross mortality of 3.2%.

From this statistical data, it is obvious that the massive hemorrhage case is a joint responsibility of Internist and Surgeon. Taking into account some of the less favorable statistics, the medical mortality with conservative treatment in all cases of grave hemorrhage, originating in ulcer, averaged at least 5% and it increased to 10% if massive hemorrhage was tabulated alone.

The decision as to whether a gastrointestinal x-ray examination should be resorted to as an emergency, or delayed, has also been a subject of some differences of opinions. We have not hesitated to do x-ray examinations of the esophagus and stomach in patients who have been brought out of shock and have at least two units of blood in reserve. Schatzki's technique, which is a modification of Hampton's method, should be employed. In the compensated bleeders (particularly those with their first bleeding episode) early roentgen examination is advised as rapid healing of small gastric or duodenal ulcers within 10 to 12 days have been reported. If x-rays are deferred beyond this period these ulcers are not detected and case would probably fall into the category of "unknown sources of bleeding." Zamcheck(12) satisfactorily demonstrated the advisability of early roentgen diagnosis in massive bleeding from the upper gastrointestinal tract in order to localize the source of hemorrhage. Warthin agrees with Zamcheck's conclusion, and in their series of cases, have reduced the number of unknown sources of bleeding by 50%. Twenty-six of our cases had emergency x-ray studies during the active bleeding episodes, with a positive x-ray diagnosis established in 17 cases (65%), with no untoward effects.

SUMMARY AND CONCLUSIONS

Ninety-one cases of massive upper gastrointestinal hemorrhage are reviewed. Sixty-two cases or 68% were due to peptic ulcer (duodenal 62%, gastric ulcer 5.5%, stomal or jejunal ulcer 1%). Thirty-two cases did not have any previous hemorrhage (51%). Excluding peptic ulcer, hemorrhage due to esophageal varices was the next largest group of bleeders (11 cases or 12% of total). In the unknown category, there were seven cases or 6.6%.

All cases were treated medically with only two requiring surgery after a short period of medical treatment. There was no mortality in any of these cases. The two patients who subsequently required early surgery had a hemorrhage from a benign gastric ulcer and recovered following an early subtotal gastric resection.

Whenever gastrointestinal x-rays were undertaken during active bleeding, there were no apparent ill effects. In 26 cases thus examined, a positive diagnosis was reached in 17 (65%).

There was no correlation in the various age groups, as to the severity of the hemorrhage, and it is our feeling that judging by age alone, no security can be felt in predicting that any individual will not have an exsanguinating hemorrhage. It is true that the bleeder, who compensates early, regardless of the initial severity of hemorrhage, may be brought to surgery at a later elective date. However, in this group, only 12 patients out of the recommended total of 45 were operated upon (27%), the remainder deferring or refusing surgery. From this observation consideration should be given to oper-

ate this group of patients at an intermediate period (four to five days) as they may refuse definitive surgical treatment after compensation occurs.

From our observations, the severe-compensated or uncompensated bleeder may improve with sufficient blood after 48 to 72 hours. Therefore, the decision to operate does not necessarily have to be made in 48 or 72 hours, provided the patient can be maintained without anoxia. There is a definite advantage in bringing the patient to operation with the anemia, blood volume and electrolyte imbalance all corrected.

Consideration should be given to operate on these patients in an intermediate period (fourth to tenth day) for two reasons: First, to avoid the danger of an early subsequent fatal hemorrhage; and secondly, because of change of attitude of patient (refusing surgery) as he improves.

The same criteria may be applied to the moderate or severe - compensated bleeder, who has pre-existing indications for gastric surgery, such as previous gastric hemorrhages, duodenal or pyloric obstruction, or intractability to medical ulcer management.

It is in these two latter groups that we feel more energetic efforts towards early surgery should be exercised by the physician or Internist together with close cooperation with the Surgeon.

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PHOENIX Clinical CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL PRESENTATION OF CASE

A sixty-three-year-old woman entered the hospital because of bloody diarrhea.

The patient, who had enjoyed robut health, suddenly began to have nausea, diarrhea and fever three weeks prior to admission; she did not vomit. For a week she had three or four daily loose movements of dark-brown feces, which contained streaks of both fresh and changed blood; this was accompanied by a vague discomfort in the left lower quadrant and a feeling of distention that we relieved somewhat by belching or bowel movements. During the subsequent two weeks the diarrhea became less noticeable; a few flecks of blood remained in the stool, and occasional left-lower quadrant pain was noted. However, during this time she lost 10 pounds in weight. There was no actual visible distention, crampy pains, vomiting, massive bleeding, tenesmus, narrowing of the stool caliber or tarry stools. On the afternoon of admission the patient suddenly began to have frequent urgent bowel movements, which were accompanied by tenesmus, mild, crampy left-lower-quadrant pain and a feeling of weakness. The feces contained at first fresh blood and later a mixture of fresh and clotted blood.

For the ten years prior to entry the patient had mild constipation and took a cathartic every second or third day. There was no history of rheumatic fever, angina, ankle edema, dyspnea, orthopnea, food intolerance or previous diarrhea or melena. She was apparently a very stoical person, but she allegedly had made vague references to abdominal pains to her friends for a number of months before admission.

Physical examination revealed a very pale woman. There was no venous congestion. The chest was clear. The heart was slightly enlarged, and a grade II systolic murmur was heard over the entire precordium. The abdomen was soft, and no masses were palpable, but there was diffuse tenderness on palpation in the left lower quadrant. Constant hyperactive peristaltic sounds were heard on auscultation. No masses were felt on rectal examination, but dark-red blood was present on the examining finger. Pelvic examination was negative.

The temperature was 99°F., the pulse 80 and slightly irregular, and the respirations 20. The blood pressure was 115 systolic, 70 diastolic.

The urine was normal. Examination of the blood disclosed 9 gm. of hemoglobin and a white-cell count of 9300. The non-protein nitrogen was 23 mg. and the total protein 5.0 gm. per 100 cc; the prothrombin time was 15 seconds (normal, 14 seconds). Sigmoidoscopic examination revealed an area of narrowing 18 cm. above the anus, beyond which the scope could not be passed and which could not be dilated with air; the mucosal pattern of the rectum was normal. The barium-enema examination showed no gross defects within the colon except for multiple diverticula in the sigmoid colon; there were no associated signs of inflammation. Barium filled the entire colon and refluxed into the terminal ileum without difficulty. There was good emptying of barium from the colon. The mucosal folds of the descending colon appeared to be slightly thickened; in other areas it was not remarkable. A roentgenogram of the chest showed clear lung fields a tortuous calcified aorta and a slightly prominent left ventricle. An electrocardiogram showed auricular premature beats and non-specific T-wave changes; the pattern was not diagnostic of a definite abnormality.

The rectal bleeding subsided during the first three days in the hospital but recurred a week later and persisted. A repeat sigmoidoscopic examination again demonstrated an obstruction to the passage of the scope about 18 cm. above the anus where the lumen was narrowed to a diameter of approximately 0.5 cm. A definite

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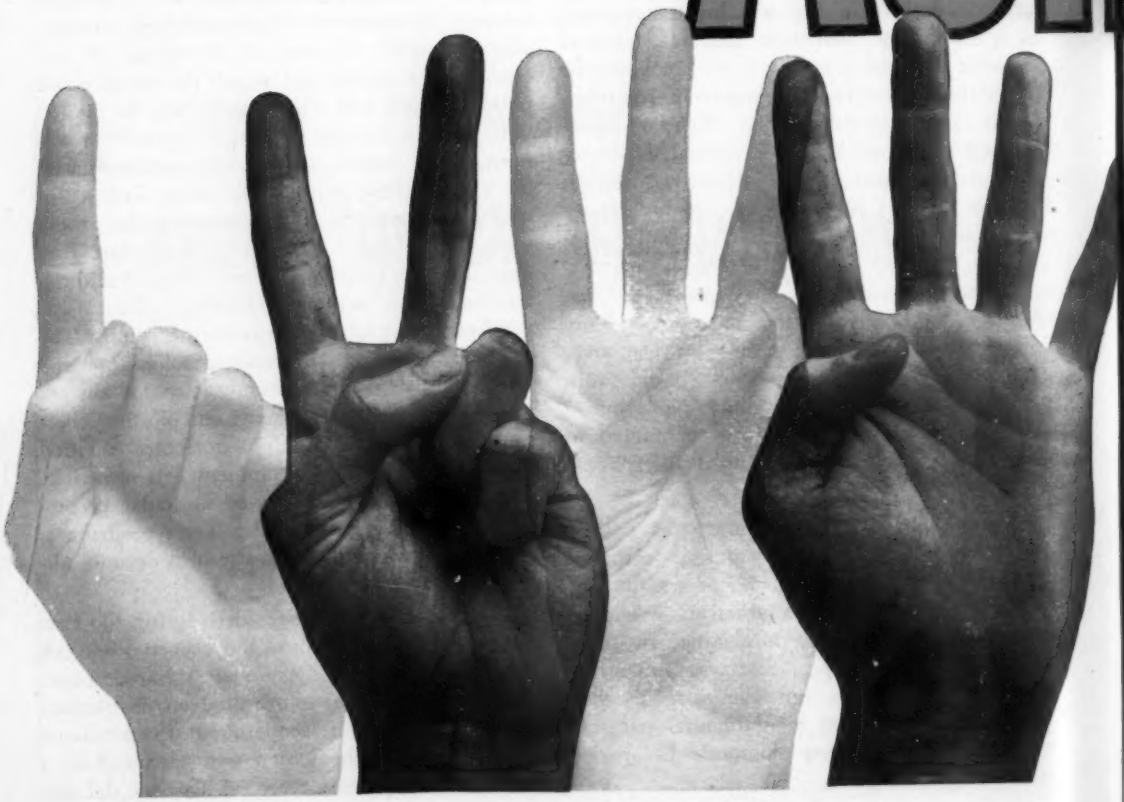

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organic stricture could not be demonstrated at this point, and the observer believed that the narrowing most probably represented spasm. The mucous membrane at this level was edematous and reddened and tended to prolapse into the lumen; below this level there was no abnormality. The patient continued to pass blood by rectum. On the fourteenth day an operation was performed.

Discussion by Dr. Howell Randolph:

This healthy 63 year old woman certainly had something wrong in the left lower quadrant. This localization is quite definite as given by the findings and by the symptoms. The record is not quite so clear as to whether the onset was extremely acute, but bleeding certainly occurred over a period of about five weeks prior to the date of her surgery. The persistent bleeding further locates the lesion as being either within the colon or immediately adjacent to and communicating with the sigmoid colon or rectum.

No indications of general peritonitis were found. Bleeding was so persistent and recurrent that the hemoglobin dropped to nine grams. The first thing that comes to mind is the possibility of carcinoma of the colon. A recent report of Hodges of 15,300 colon examinations by x-ray, revealed 131 primary neoplasms of the large bowel. 102 of these were verified. In the syptomatology, change in the bowel habits in 48 per cent, blood in the stools in 43 per cent, abdominal pain in 20 per cent. In 70 per cent of these cases sigmoidoscopy was successful in making a diagnosis. However, in our patient, at the 18 cm. level, definite concentric narrowing of the colon occurred which was thought possibly to be due to spasm, in view of the fact that the x-ray examinations were negative for carcinoma. Hodges' study fails to state how many x-ray examinations were negative in the presence of an actual tumor, however. 83 per cent of the tumors were found in the sigmoid and rectum and only 17 per cent in the transverse ascending or descending colon. The impression was given that carcinoma is almost always recognized by x-ray examination. So, for the sake of argument, let us turn to a second possibility. Multiple diverticulae were noted in the sigmoid colon on the x-ray following barium enema. Their so common occurrence on routine examinations tends to lessen one's awareness of the potential malignant character of these lesions, not in the sense of new growth but in the sense of sources of serious complications. Diverticulae may become quite large and may rupture and cause general peritonitis or localized abscess formation. These were present in approximately 25 per cent of all cases examined in Hodges' study. Polyposis is another condition which might be present, but it is not diagnosed on these x-rays. When serious polyposis is present, intermittent bleeding is rather common. Since the sigmoidoscope did not go above 18 cm., it is possible either one of these conditions could have been missed, as they usually exist in the upper sigmoid.

Infection such as amebae were probably ruled out but not mentioned.

Although this patient had no chronic symptoms as would be explained by a chronic colitis, some ulcerative lesion of the colon other than malignancy could have produced the localizing symptoms. Since symptoms and signs are so well localized in this case, rather than wander far afield in search of remote possibilities, I am going to place my chips on the diagnosis of diverticulitis with diverticulum abscess and ulceration of bowel with hemorrhage.

Differential Diagnosis

DR. WARREN POINT: This patient had ten years of mild constipation and then a sudden onset of left-lower-quadrant inflammation with bloody diarrhea. Further examination revealed a normal rectum and an apparently spastic area 18 cm. above the anus, at which point the mucosa was reddened and edematous. X-ray examination revealed no filling defect, with satisfactory emptying; there was no stricture. Hence I must call the narrowed area "spasm", rather than true cicatricial, or neoplastic, stricture. Contrary to the x-ray interpretation in the record, the films that were given to me with the protocol revealed "amputation" of diverticula in the sigmoid, and this, with thickened mucosal folds in the descending colon, is adequate evidence of inflammation of some type. This interpretation is confirmed by the sigmoidoscopic picture of spasm and edematous, reddened mucosa.

I am satisfied that the barium enema and the sigmoidoscopic examination together gave an accurate picture of the lower bowel. There is no evidence that disease existed elsewhere to

explain the symptoms, since all signs pointed to the left lower quadrant.

What pathologic entities could account for this picture? Ulcerative colitis is not suggested by the sudden onset in a patient of this age, the lack of ulcerations by x-ray and direct examination and the whole clinical picture. Amebiasis is fairly well ruled out by the course of the disease, the fever and the intense localization. The last would presuppose an amebic granuloma, which is not suggested here. Lymphopathia venereum may produce a rectal stricture, but this was not a stricture, nor was it the chronic course of this veneral disease. Bacillary dysentery of such severity would produce an intense, diffuse inflammation of the entire colon, and there would be no sparing of the rectal region. Benign polyps may bleed massively at times, but it is unusual. Certainly, fever and inflammation would be highly unusual. The same reservation holds for any other potential bleeding lesion, such as angioma. There was no evidence for lymphoma, malignant melanoma, tuberculosis and so on.

Carcinoma must be considered. This is a fairly common cause of rectal bleeding and change in bowel habits such as this patient described. It is probably the most common cause of rectal bleeding in older patients if we except hemorrhoids. Perforation of the tumorous colon may produce an abscess with attendant signs of leukocytois, fever and tenderness. Ulceration of the tumor may cause bleeding. Intermitten, spontaneous diarrhea may alternate with constipation in about 20 per cent of the cases of carcinoma of the descending colon, despite the fact that it is much more common to have constipation and obstructive symptoms. It is difficult to accept this diagnosis, however, because adequate examination of the bowel failed to reveal any sign of filling defect or a mass. Obstructive spasm below a carcinoma is rare; if the growth is within reach of the sigmoidoscope, it should be seen easily. According to Bockus, this is an important point in differentiating carcinoma from diverticulitis of the sigmoid colon.

Diverticulosis was most certainly present in this patient, and I believe there is adequate evidence of diverticulitis, with spasm, tenderness, fever, diarrhea, mucosal edema and "amputation" of several of the pockets. This indicates nonfilling of the pocket itself, with partial filling of the neck – a condition seen with an inflamed or narrowed entrance to a diverticulum. Sigmoidoscopic examination is rarely diagnostic for diverticula, but contracture of spasm is commonly seen in the presence of inflammation. The inflamed section of bowel may be rigid and angulated. These findings are also confirmed by x-ray examination in many cases.

Bleeding from diverticula has been a controversial subject for many years. This point is now fairly well accepted. Willard and Bockus found gross bleeding in 5 of 72 cases of diverticlosis. The danger in accepting this theory is that diverticulosis is quite a common disease in the older age group, and the physician must not let the known presence of diverticula blind him to the possible presence of other bleeding lesions. There is no reason to believe that diverticulosis predisposes to the development of carcinoma.

In conclusion, I believe that this patient had diverticulitis of the sigmoid colon, the most common and usually the only symptomatic location. The operation performed was probably local resection of the involved sigmoid, possibly with a preliminary colostomy to divert the fecal stream and promote healing before a direct attack upon the involved area. Whether this was necessary is dependent upon the degree of local sepsis. Since no mention is made in the protocol of continuing high fever, and since fourteen days elapsed before operation, I assume that it was a primary resection. This should have been adequate time to prepare the infected bowel for operation.

I cannot rule out an incidental carcinoma that produced bleeding, but there is no evidence for this, and I have abundant evidence for significant diverticulitis of such a degree as to produce gross bleeding. I shall, therefore, confine my diagnosis to diverticulitis of the sigmoid colon.

Clinical Diagnosis

Diverticulitis.

Dr. Point's Diagnosis

Diverticulitis of sigmoid colon.

Anatomical Diagnosis

Chronic ulcerative colitis, localized to sigmoid. Diverticulosis.

Pathological Discussion

Dr. DAVID KAHN: This case, I fear, had a number of diagnostic "blind spots". The only

sure way of making a diagnosis was by operation. The preoperative clinical diagnosis was diverticulitis. After a preliminary transverse colostomy, 48 cm. of descending and sigmoid colon was removed. Numerous small diverticula were present but these all had wide necks and showed no evidence of diverticulitis or peridiverticulitis. There was a 12 cm. segment of the bowel that was indurated and thickened; this began 7 cm. from the distal resected edge. The mucosa in this area was irregularly ulcerated, the ulcers being irregular in shape and size, but being on the whole longitudinally disposed. There were only small areas of hyperemic mucosa separating these ulcers. The ulcers on the whole were shallow, had sloping edges and were not undermind.

Microscopical examination showed the depth of ulcers to vary, some involving only mucosa, and others mucosa and submucosa; a few penetrated to involve the superficial part of the inner muscle coat. The surface of many of the ulcers was covered by a thin coat of fibrin, and the floor was made up of a loose vascular connective tissue infiltrated by a varying number of lymphocytes and plasma cells and an occasional eosinophil. In others the ulcer surface was lined by a layer of flattened cells, and the floor composed of either vascular connective tissue or fibrous tissue resembling submucosa; this may have represented early healing. The muscle coat was somewhat thickened and hypertrophied and had some scattered fibrosis. A very occasional crypt abscess, as described by Warren and Sommers, was found.

A new thought concerning ulcerative colitis has recently been suggested by Levine and his co-workers.[5] Using histochemical technics and phase microscopy, they demonstrated certain distinct changes in the basement membranes and intercellular connective tissue in the mucosa and submucosa in biopsy material removed from patients with ulcerative colitis. The changes were similar to those seen in the "collagen diseases", and these workers regarded the fundamental tissue reaction in ulcerative colitis as similar to that in this group of diseases. We examined sections stained by the periodicacid Schiff technic, but the findings were equivocal. We were unable to find any constant basement-membrane change except in a few degenerated surface glands, or fibrinoid necrosis or vasculitis; the fact that we studied formalin fixed material made interpretation of these stains somewhat less specific.

We found no evidence of tuberculosis, amebiasis or of any other specific cause for this ulcerative process and so must classify it as idiopathic ulcerative colitis. Whether this will remain as one of the less common varieties of ulcerative colitis, the localized type, remains to be seen; it may well spread to involve other parts of the large intestine. At the end of three months the patient appeared to be doing well, and sigmoidoscopic and barium enema examinations were negative. It may be worth while to add here that our colleagues in the x-ray department inform us that, as Dr. Point has already pointed out, diverticulitis is rarely responsible for gross bleeding.

THE President's PAGE

STATE OF ARIZONA
TWENTY-SECOND LEGISLATURE
FIRST REGULAR SESSION

Measures Introduced of Interest to Medical Profession

H. B. 36 OPTOMETRY
Provides for exempting of disabled veterans experienced in optometry from qualifying examinations as a requirement for receiving a license to practice in Arizona. This bill has been opposed by the American Legion and termed class legislation.

H. B. 47 ESTABLISHMENT OF CLINICS FOR CHILDREN AND ADOLESCENTS
Authorizes the state department of health to establish and maintain clinics for diagnosis and treatment of children under 19 years of age who are afflicted with crippling diseases.

H. B. 54 STATE-WIDE PREVENTIVE MENTAL HEALTH PROGRAM
Provides an appropriation to the state department of health to set up and maintain with federal aid a state-wide preventive mental health program.

H. B. 73 OCCUPATIONAL DISEASE AND DISABILITY
Provides increase in benefits payable due to disability or death from silicosis or asbestosis.

H. B. 81 ARIZONA STATE BOARD OF PSYCHOLOGICAL EXAMINERS
Provides for the creation of the Arizona State Board of Psychological Examiners to license psychologists and psychological technicians and to regulate and control their practices, specifically prohibiting the practice of medicine.

H. B. 90 NARCOTIC DRUGS
Provides for the filling of physicians' oral prescriptions calling for certain narcotic drugs or content, in accordance with the directive provided through federal legislation during the 83rd Congress permitting oral prescriptions.

H. B. 94 PRE-MARITAL BLOOD TEST
Prescribes a pre-marital examination for venereal disease and provides for a certificate of blood test.

H. B. 113 PUBLIC HOSPITALS
Relates to hospitals supported by public revenue and makes physicians liable for hospital fees of their private patients in public hospitals.

S. B. 42 OBSCENE AND INDECENT AND SUBVERSIVE LITERATURE
Prohibits sale of obscene and indecent and subversive literature with possible effect on prescribing of contraceptive measures.

S. B. 78 CREATING THE ARIZONA COMMISSION ON ALCOHOLISM
Creates the Arizona Commission on Alcoholism to be composed of five members appointed by the Governor approved by the senate to serve for terms of five years.

These and other important bills are being reviewed by your Legislation Committee. If you have any questions or suggestions to offer, contact your Chairman, Doctor Millard Jeffrey, 411 Security Building, Phoenix, Arizona.

Editorial

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CONTRIBUTORS

The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. (See MEDICAL WRITING by Morris Fishbein).
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Submit manuscript typewritten and double-spaced.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.

The Editor is always ready, willing, and happy to help in any way possible.

BLOOD TRANSFUSION

A RECENT meeting of the Good Samaritan Hospital Staff in Phoenix served to crystalize to the staff the inherent risks of blood transfusion. No method of screening or testing can eliminate a 0.1-0.5% risk of hepatitis from transfusion of whole blood in well-managed blood banks. The risk of a transfusion actually exceeds the risk of modern anesthesia administration in surgery. Therefore for *minor* anemias or blood loss problems, transfusions should never be used.

In moderate shock or blood loss problems liquid plasma stored at room temperature – for six months or longer by well-managed blood banks, can be used with negligible risk of serum hepatitis, and effective control of the patient. Not so the lypholized plasma of wartime!!

In severe blood loss or shock, whole blood transfusion is available, and in spite of its small risk of serum reaction hepatitis, is valuable and life-saving where really needed.

The use of levophed to control falling blood pressure in the actively bleeding patient is dangerous inasmuch as it drives more blood out of the circulation. In rapid hemorrhage, whole blood transfusion, not too rapidly given, is preferable 'till preparations can be made to surgically or medically arrest the hemorrhage, when rapid transfusion may be safely employed to raise the pressure and restore blood volume.

Over transfusing or too rapid transfusing with it's dangers of pulmonary edema must always be watched for, and if necessary bleeding of the patient and positive pressure respiration employed.

By thoughtfulness the physician will not employ whole blood where he can correct anemia by medical means, or overcome transient not too severe difficulties with plasma. There should be no post-operative death from blood transfusion hepatitis where the surgery only called for a single 500 cubic centimeter transfusion.

Use blood transfusion, therefore, only with studied caution where it's need is completely justified and proper.

NOTICE

ALL CONTRIBUTORS OF ARIZONA MEDICINE SHOULD HAVE THEIR MATERIAL IN THE JOURNAL OFFICE NOT LATER THAN THE 10th OF THE MONTH PRIOR TO PUBLICATION IN ORDER TO HAVE ARIZONA MEDICINE REACH ITS READERS ON OR BEFORE THE 10th OF THE MONTH

Material arriving after that date will be published the following month.

TOPICS OF *Current Medical* INTEREST

RX., DX., AND DRS.

By GUILLERMO OSLER

A piece of FAN MAIL has arrived from E.B.S. of Phoenix, but it wasn't the flattering kind. . . . He takes issue with a report in this column (Dec. 1954) which mentioned the lack of TOXICITY from the prophylactic use OF TERRAMYCIN in nephrosis and rheumatic fever cases. . . . He sent a reprint from the New England Journal of Medicine, describing the use of fairly good-sized doses (0.5 to 1.0 gm. per day for 8 days) in 20 Cleveland families. There WAS toxicity. . . . Sorry. We were just quoting in the December paragraph, but the doses were only a tenth of the Cleveland amounts, the use was for 1 to 3 years, and we noted that "It is said" to be almost free of toxicity.

It is not unpleasant to get comments or corrections, so don't hold off because it might strike a sensitive spot. We could say (if the stenographer or printer doesn't ruin it) what a Delaware newspaper once said in appreciation of corrections, — "THAMKS!"

VITAMINS have been used in another new way (or new title). The preparations are called "Stress Fortified", and combine a tetracycline drug with a load of vitamins. . . . The indications include acute or chronic infection, and the secondary indication of convenience.

J. G. Allen, prof. of surgery at the University of Chicago, reports more extensive results of his "lazy method" for STERILIZING PLASMA. . . . It was suggested last year that storing plasma at room temperature for 6 months resulted in a decrease in 'homologous serum hepatitis'. Now he says that, in contrast to 200 cases of jaundice following 1500 transfusions, they have data to show a complete absence of 'virus jaundice' after 300,000 plasma transfusions.

Dr. Allen also reports that 3 cases of SEVERE ULCERATIVE COLITIS treated by total colectomy are all alive and back at work. This is a terrific result in a tough condition.

The American Academy of General Practice is sponsoring greater use of the PRECEPTOR TRAINING system which is in use in 22 medical schools, and compulsory in nine. . . . Bibler of Indiana summarizes (and gives testimonials to) its use in the small journal 'Current Medical Digest'. He mentions Texas, Kansas, Wisconsin, Iowa, South Dakota, Yale, Oklahoma, Vermont, and Washington as schools in which the program is routine. He also gives the Indiana method a plug. . . . The idea of having students spend a few weeks or months with a physician or clinic goes back to the 1700's, and was the ONLY way until 1765. We suspect that the University of Wisconsin preceptor system is the oldest and best organized of the modern compulsory programs. The late Dr. Charles Bardeen was given the credit for starting and carrying it along in the years after 1925, tho the late Dr. Joseph S. Evans helped found and continue it. They have used clinics in ten or eleven of the larger cities of the state, and it makes Every Man His Own Professor, as well as giving the kids an idea at what they may want to aim.

The evident SENSITIVITY OF THE BONE-MARROW to the new drugs is VERY evident from case-reports in current medical literature. Depression of blood cell formation, especially WBCs, can occur with Fumagillin, Butazolidin, Thorazine, et al., ad infinitum. . . . You name it and SOMEONE has found a neutropenia. It was ever thus.

It has been reported that interns and residents want less 'dry' teaching, less 1, 2, 3 lectures, and MORE CASE-ANALYSIS presentations. . . . Wyeth Co. apparently is jumping to translate these requests to medical advertising. An entire pamphlet of "Your Patient" (which they have started to publish) is filled with an illustrated script of an intern, an attending M.D., and a bacteriologist examining cases of sore throat, checking the bacterial and sensitivity findings, discussing the cases, and dropping a casual mention of the use of Bicillin (Wyeth). . . . Quite good.

The anabolic effect of ANDROGENS in the elderly is often good if one does not forget that sodium is retained as well as nitrogen and potassium. . . . The clinical effect can include a sense of well-being, and better muscular and mental activity.

Something has happened to IRON METABOLISM since our days of learning, including a convulsion of terminology. . . . It now seems quite clear to quite a few people that ingested iron becomes ferrous iron after contact with the hydrochloric acid of the stomach. Ferrous iron is then absorbed from the duodenal mucosa (at a rate determined by reserves in storage), combines with apoferritin as colloidal ferric hydroxide, and becomes ferritin. . . . A beta globulin called siderophilin binds the ferritin for transport and carries it to the liver, spleen, and marrow for storage. . . . It is not know how the stored ferritin is related to the long-recognized hemosiderin (which makes us all feel better about hemopoietic ignorance).

HBA FOR SECURITY

THE HOSPITAL BENEFIT Bulletin

Special Published Bi-Monthly by Hospital Benefit Assurance, First Street at Willetta, Phoenix April, 1955

Question QUIZ
Do you know the answers?

Q. Why is it important for a policyholder to have a hospital plan that gives the Right to Renew?

A. Let's assume the policyholder pays premiums monthly. Technically, the policy is renewed once a month. If the policyholder does not have the Right to Renew, the company can refuse renewal by refusing to accept the premium payment, thus depriving the policyholder of any further benefits. This would work a particular hardship on a person developing a recurring illness requiring repeated hospitalization, as he would be unable, because of his recurring condition, to seek coverage from another company for that condition.

Q. Does the HBA Surgical Plan pay benefits for home calls or office calls for treatment of accidental injuries?

A. Yes. HBA surgical schedules provide for treatment of accidental injuries anywhere, provided such treatment is administered within 24 hours after the accident. The HBA does not, however, pay for medical treatment of illness or for non-accident treatment or surgery outside a licensed hospital.

Q. Is there any way I can help HBA speed the payment of my bills?

A. Yes. Send us the filled-in billing form, promptly as you can. Once we receive a bill, we try to send the check within three to five days. All too often, payment is held up for weeks while the HBA Benefit Department waits for the doctor's office to make out and send us his bill. On your bill, tell us the Membership Number of the patient (on the Membership Card); the date and nature of the accident; and what treatment you gave and your fee for that treatment.

Just what the Doctor ordered . . .

THIS IS THE NEW HBA LIFE SAVINGS "BOND"

Buy it today, redeem it tomorrow at the same price. Keep it for a year and you earn a profit. It increases in value year after year, as long as you want to keep it, compounding its own interest.

As long as you live it is a GOOD INVESTMENT!

Table shows initial investment per $1,000 principal at age shown. The figures following the amount for your age are the INCREASED cash values each year.

AGE	Cost or CASH VALUE
30	$353.17
31	361.49
32	369.99
33	378.65
34	387.49
35	396.49
36	405.65
37	414.98
38	424.46
39	434.11
40	443.90
41	453.84
42	463.92
43	474.15
44	484.50
45	494.97

But if you die . . . and if you bought your HBA LIFE SAVINGS BOND before you were 45 years of age, we will pay MORE THAN DOUBLE your investment to your estate or beneficiary.

Actually, the HBA LIFE SAVINGS BOND is a Single Premium Legal Reserve Life Policy offered to you at NET COST . . . which means that NO EXPENSE is charged to it, and your investment increases in value the first year . . . and every year thereafter, as long as you live . . . and pays the principal sum when you die.

We don't believe your own insurance man can give you a deal like this. You may check with him if you like. If he tells you we are crazy . . . call us and we will come over and show you the contract.

No gimmicks, no stocks, no ifs.

In Phoenix, call George E. Richardson or Milt Sanders at AL 8-4888.

In Tucson, call Bob O'Rourke, 3-9421.

But don't wait too long. We will issue no more than 150 of the HBA LIFE SAVINGS BONDS.

Send this coupon to: HOSPITAL BENEFIT ASSURANCE, First Street & Willetta, Phoenix, Ariz.

Please send me complete information on HBA LIFE SAVINGS BOND.

Name .....

Address .....

City .....

"I don't know — unless it's the vitamins we've been feeding the dog."

A newly suggested therapy for menstrual cramps is NIACIN. . . . Hudgins found relief in 90% of 220 patients who had been completely incapacitated by the syndrome. He used 100 mg. orally twice a day for 7-10 days before flow. . . . High vitamin, mineral, and protein supplements were basic. Rutin and Vit. C "improved the effectiveness of niacin".

The San Francisco area always seems to have an ANTAGONIST to the use of CASE-FINDING X-RAYS. Roentgenologists, too. . . . In the old days, circa 1940, Stone used to hold up the parade by calling miniature films 'diagnostic', and insisting on $5 to $10 apiece for interpretation. . . . Now Garland deprecates the yield of cancer cases from mass surveys, and says that patients don't go to surgery soon enough anyway and the salvage is too low. . . . Such reasoning would stop progress of any sort, unless one figured that films should be taken MORE often; social service and education would get the patients on the table faster; and more lives would be saved, especially with lobectomy.

C. A. Janda of Tucson received encouragement from his inquiry to 'Queries and Minor Notes' of the J.A.M.A. . . . He suggested that AN AEROSOL OF AMMONIUM CHLORIDE seemed effective in liquefying mucus in cases of chronic bronchitis. The editor agreed that it was worthwhile, especially if one were trying to avoid the bleeding which inhaled 'lytic agents' often cause.

The Journal of the Michigan State Medical Society spreads itself two or three times per year on several aspects of some major topic. . . . In October 1954 they chose DIABETES, and had articles on diabetes and heart disease, surgery of the diabetic, pathogenesis of diabetes (they don't know), and the action of insulin (ditto). . . . Merck's Manual is almost as good, tho not as pleasantly speculative.

One of the most UNUSUAL SOURCES for this column is the 'Office of the President, American Cyanamid Company'. They want us to know that altho Pfizer got a license to make TETRACYCLINE from chlortetracycline, and Cyanamid has to pay Pfizer royalties; that Cyanamid's Lederle can still make "Achromycin" tetracycline; that Bristol and Pfizer are beholden by license to Cyanamid for current manufacture and sale of tetracycline; and that they must pay royalties for the drug made by their present methods. So there. . . . Squibb and Upjohn distribute drug made by Bristol.

HYDROCORTISONE OINTMENTS are being used for almost every kind of skin lesion, but the results in atopic, contact, or pruritic dermatitis are especially good. The drug itself seems to cause no adverse reactions. . . . The addition of antibiotics may help clear infection, and do not seem to interfere with the steroid action.

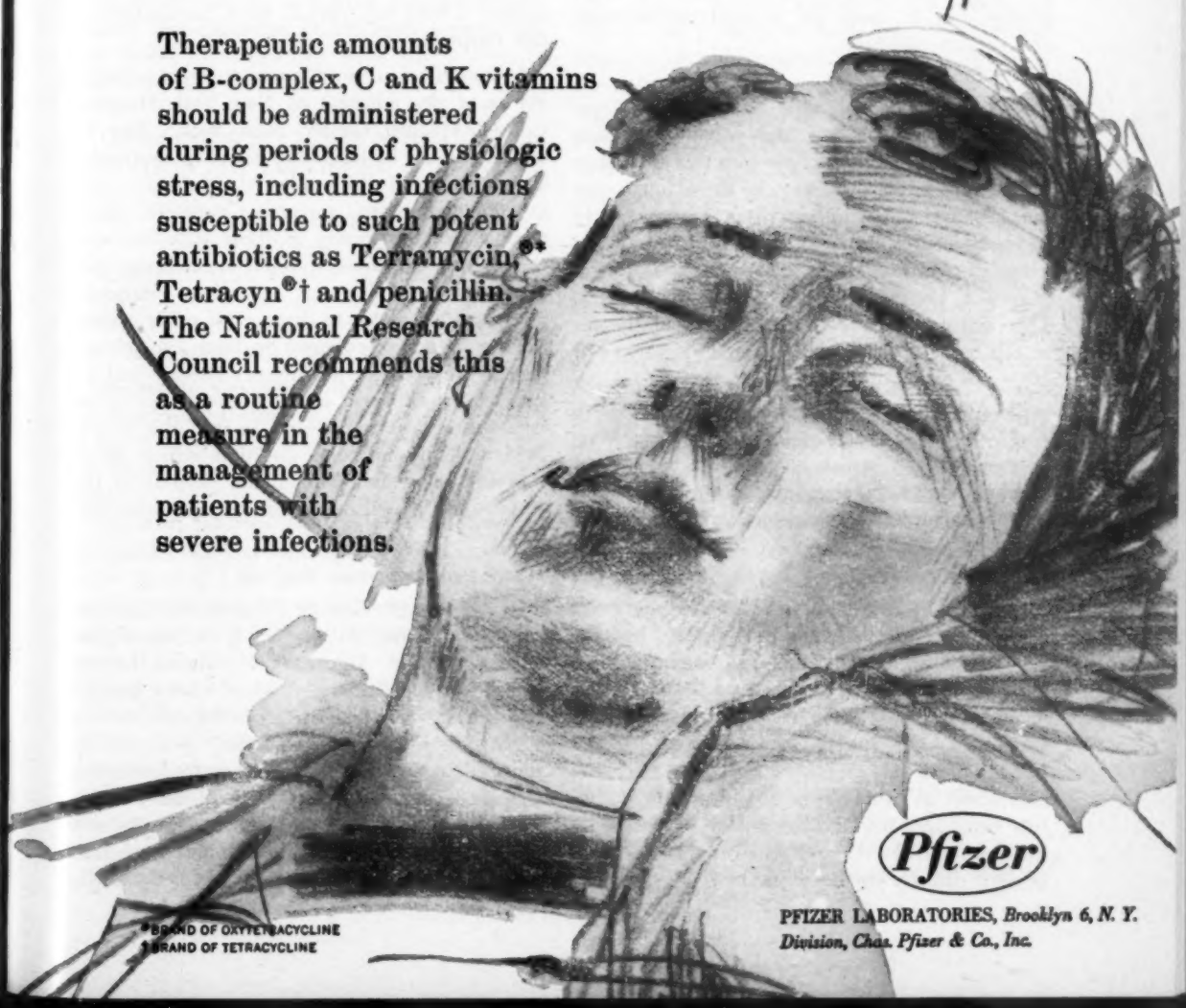
Since the ARIZONA TB & HEALTH ASSOCIATION has joined with other groups to urge the law-makers to modernize the statutes on care of TB, it might be profitable to look at the methods of our neighbors. . . . As has been mentioned here long since, the STATE OF WASHINGTON has had rules for control of the disease for years, and enforced them without too much 'sweat' (or pain). . . . CALIFORNIA has had rules, but has begun to apply them only in the past 3 or 4 years. They have somewhat the same transient and health resort problem there, and it is of huge proportions in the Los Angeles area. The rules include compulsory sanatorium care, or segregation at home, for all active infectious patients. . . . The Los Angeles problem is handled very well by cooperation between the sanatoria and the county and city health departments; by gradual cooperation of the physicians, and especially the chest specialists; by extending the case-finding attempts; and by judicious use of available beds. . . . The placement is handled by a special committee, and works very well. . . . There are 2,500 beds in L.A. County. About 300 are occupied by patients without perfect residence requirements; but the object of 'placement' is to take people in because of either medical or public health reasons. . . . There are a couple of hundred beds for recalcitrant patients, and they usually submit to treatment and edge over into ordinary san care when their sentences are completed. The judges are nearly 100% co-operative in protecting public health. . . . The highest incidence of tuberculosis is found among the routine x-rays of admissions to jail, about 12 to 15%. The second highest (6-8%) is among the relief recipients. L.A. has special facilities for alcoholic TBs. . . . The State of Cailfornia has a 'facility' on Terminal Island for extreme unco-operatives, but it is too small, and the beds are allotted at the rate of 2 per county. . . . They are also building quarters for 100 more beds at each of two Los Angeles locations for segregation of recalcitrants. . . . It is interesting to note that the successful care of such patients is due to the fact that all of the san personnel are also deputy sheriffs. Therapy is suggested and made available to all but, if they refuse it (or food), it is their own business as long as they observe the rules. Very few have refused therapy after the first few months of the present methods.

A recent report on the SCALENUS ANTICUS SYNDROME has recalled one of the most incongruous case we have ever seen. A rancher complained that his hands became numb and functionless before he could complete the milking of a small string of cows. This was embarrassing because he was trying to do the job for his mother, who had been forced to stop milking for the same reason. . . . The case had to be treated with even more discretion than usual because of an even more embarrassing fact, — his ranch raised BEEF cattle, and he would rather be caught raising sheep than milking a cow!

Stress Fortify

the patient with infections

Therapeutic amounts of B-complex, C and K vitamins should be administered during periods of physiologic stress, including infections susceptible to such potent antibiotics as Terramycin,®* Tetracyn®† and penicillin. The National Research Council recommends this as a routine measure in the management of patients with severe infections.



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Division, Chas. Pfizer & Co., Inc.

Organization PAGE

CIVICS

Norman A. Ross, M.D., Phoenix, Arizona

"Certainly your inquiry into the activities of the *volunteer health agencies* is a worthwhile one, because I know from my own experience that we are often remiss in not making our programs completely known to the medical profession which we are *actually organized to serve* in one way or another."

MUSCULAR DYSTROPHY ASSOCIATION OF AMERICA, INC., MARICOPA COUNTY CHAPTER, 4431 North 7th Avenue, Phoenix, Arizona, is dedicated to two fundamental purposes: (1) to raise funds to finance research into the cause of and cure for Muscular Dystrophy; (2) to carry out a local patient care and service program.

(1) *Research*

Until the organization of the Muscular Dystrophy Associations four and a half years ago little research was being done into this and many similar and allied diseases. In these four years the Association has underwritten approximately 65 research projects in 45 medical institutions at a cost of over $1,000,000. "Medical Research in Muscular Dystrophy" is available on request. This list of grants reveals the scope of the research being undertaken and the wide variety of areas of exploration.

The association's Scientific Director has a variety of professional literature regarding Muscular Dystrophy which is available on request to physicians as well as an assortment of professional material for registered physical therapists.

Each year the Association holds a medical conference. Last October in New York city this conference included four symposiums on the research developments and two on various aspects of patient service and medical management. The proceedings of this conference will be published by the *American Journal of Physical Medicine this month as a special issue.* Reprints will be available in quantity shortly after this issue appears. Professional information on developments in research is available and will be sent directly to the requesting physician.

In addition, the Association is preparing for the concentration of certain basic research facilities which are needed. This concentration of facilities will permit the more intensive study of basic problems which will require a laboratory building, equipment and permanent personnel. It will leave free for new work other grantees who can pursue research on a pioneering basis, allowing each man to work according to his interest in special areas of exploration. Thus a *Muscle Research Institute* would be to the general problem of muscle research as the Sloan-Kettering Institute for Cancer is to cancer. One million dollars has already been earmarked for this purpose.

Negotiations are under way to erect a building on a site adjacent to New York Hospital, Cornell Medical Center, New York. The *research will not be limited* to muscular dystrophy. The scope will include other allied diseases; e.g. myotonia atrophica, amyotonia cogenita, amyotrophic lateral sclerosis, multiple sclerosis, myathenia gravis, neuritis, myositis, muscular atrophy subsequent to nervous disorders, muscular atrophy subsequent to diseases of other organs, muscle weakness common to later age groups, rigidity occurring in Parkinson's Disease and the problem of cachexia which accompanies or occurs subsequent to cancer. In fact, the general field of neuro-muscular disorders which affects between three and five million persons in this country today will be considered its proper field of study.

(2) *Patient Service Program*

The Maricopa County Chapter has initiated a program of patient service for victims of muscular dystrophy. Generally, it includes the purchase, repair and rental of wheel chairs, hospital beds, lifts, walkers and other orthopedic devices when prescribed by a physician. It is also authorized to pay for physical therapy treatments when prescribed by a physician. In the past year the Chapter has purchased several pieces of equipment and is now developing a program whereby therapy can be provided for those who

have requested. The medical profession can be of great service in furthering this assistance program by contacting the Chapter when such needs arise and by notifying the Chapter of all patients they are attending so that the Chapter's service can be made available to them.

It is only during the last year that Chapters have undertaken a patient service program so that the precise shape it will take is difficult to anticipate. The Chapters adjust their program, within their authority, to best fit the needs of the patients in their areas, so definitive budgeting for this service cannot be taken until firm patterns emerge. However, as all of the victims of Muscular Dystrophy become familiar with the Chapter and its service the program will accelerate and it is the Chapter's function to make as much such service available as possible to these patients who need assistance.

Perhaps the true essence of the local program is to assist patients and their families toward making life somewhat easier, more comfortable and useful until research does find a cure or control for this ailment.

* * *

ARIZONA TUBERCULOSIS & HEALTH ASSOCIATION, 111 East Willetta, Phoenix, Arizona.

ANNOUNCEMENT
of the
TRUDEAU SCHOOL OF TUBERCULOSIS
for
1955
Forty-first Annual Session

Despite the closing of the clinical facilities of the Trudeau Sanatorium, the forty-first session of the Trudeau School of Tuberculosis will begin Wednesday, June 1st, and continue to June 29th.

The staff, facilities and skills of the Trudeau organization laboratories, of the various sanatoria in the Saranac Lake area, and of the practising tuberculosis specialists of Saranac Lake will be called upon as in the past to present the program.

The course will cover all aspects of pulmonary tuberculosis and also certain phases of other chronic chest diseases, including those of occupational origin.

The schedule for the 1955 course is in preparation but copies of the program for 1954 are available.

Registrations will be limited and it is suggested that those planning to attend make early application for enrollment.

The tuition is $100, payable to the Trudeau School on or before the opening date, June 1, 1955. A few scholarships are available for those individuals who can qualify.

The Trudeau School of Tuberculosis has been approved for training of veterans under Public Laws and any applicant desiring to obtain veteran's benefits should clear his registration with the Veterans Administration before the session begins.

Applications and more detailed information may be obtained through the Arizona Tuberculosis and Health Association, P. O. Box 5155, Phoenix, Arizona.

* * *

"I think you are rendering a splendid service to your readership by explaining the local implications of the programs of the National Foundation, Cancer Society, American Red Cross, and others and I sincerely hope that the material which we have submitted will qualify for publication."

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, INC., 120 Broadway, New York 5, New York, State Office 39 West Adams, Phoenix, Arizona.

The impact of the program of the National Foundation for Infantile Paralysis on physicians and their patients in the State of Arizona as reported in the March issue is clarified by the following statement:

Total contributions from Arizonans to the March of Dimes up to January 1, 1955, came to $1,994,972.24. March of Dimes contributions are normally divided on the basis of 50 per cent remaining with the Chapters and 50 per cent sent to national headquarters. In the event that patient aid costs exceed the 50 per cent which is retained by Chapters, these Chapters draw on the national headquarters. Through the years Arizona Chapters have exercised their right of drawing on national funds to the extent that 69.07 per cent of all funds raised in Arizona have been expended within the state for patient aid – thus, of the gross total raised, only $599,140.71 have been available to the national office for expenditure in the cause of scientific research and professional education. In other words, total advances from national funds have amounted to nearly $500,000.

This advantage in the division of the total re-

ceipts from March of Dimes campaigns is not unique in Arizona. A number of other states in which there has been a continuing high incidence of polio have also expended more than 50 per cent.

* * *

The above quotations are typical of the reactions of volunteer health agencies to the question put to them in the February issue "How does my volunteer dollar affect me personally? How has it affected my patients in 1954? How will it affect us in 1955?"

The quotations from the Muscular Dystrophy Association and the National Foundation for Infantile Paralysis accompanied their letters of transmissal of their contributions in response to the above questions.

Such statements are *real examples* of medicine's fine *public relations* at community, state, and national levels.

AMERICAN COLLEGE OF CHEST PHYSICIANS

THE 21st Annual Meeting of the American College of Chest Physicians will be held at the Ambassador Hotel, Atlantic City, New Jersey, June 1 through 5, 1955. The scientific program will include approximately 200 speakers representing specialists in all aspects of diseases of the heart and lungs. In addition to formal presentations, the program comprises a number of symposia, round table luncheon discussions, diagnostic-treatment conference and motion pictures. More than the usual amount of time has been allotted for open discussion.

A new feature this year will be the Fireside Conferences, to be presented no Friday evening, June 3. At this session more than thirty experts will be present to lead the discussions on as many subjects of current interest in the specialty of diseases of the chest.

Fellowship examinations will be held on June 2, and on Saturday evening, June 4, more than 100 physicians will receive their Fellowship certificates at the annual Convocation which will precede the Presidents' Banquet.

All interested physicians are cordially invited to attend the 21st Annual Meeting of the College; there is no registration fee. Copies of the program may be obtained by writing to the Executive Offices, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

Notes from the EDITORS PEN

SOMETHING TO PONDER

Indiana, long known as the Hoosier state, also is known for its independent attitude toward federal handouts. For the fourth successive year it has said NO to Washington for most federal aid, subsidy, or give-away programs. Since it adopted this policy in 1951 it is reported to have turned its back on twenty-five million dollars or more. In 1954, for example, the state declined federal money for hospital construction, preventing the building of an armory that it believed was not needed, and stopped a federal housing program. In 1955, more than $16,000 for a federal educational conference has been refused. In 1954, Indianapolis refused federal hospital funds but raised twelve million dollars locally and this same city rejected one and one-half million dollars to remodel the municipal airport.

Indiana's policy began with a declaration of its general assembly in 1945: "Indiana needs no guardian and intends to have none. We Hoosiers — like the people of our sister states — were fooled for quite a spell by the magician's trick that a dollar taxed out of our pockets and sent to Washington will be bigger when it comes back to us. We find that it lost weight in the journey to Washington and back. The political brokerage of the bureaucrats has been deducted. We have decided that there is no such thing as federal aid. We know that there is no wealth to tax that is not already within the boundaries of the 48 states."

AMEF — CONTRIBUTIONS

More than $1,000,000 has been contributed to the American Medical Education Foundation Fund by Life Insurance Companies — the first business group to pass the million dollar mark since inception of the Fund back in 1949.

VOLUNTARY HEALTH INSURANCE

The Health Insurance Council reports that more than 100 million persons, or better than 60 per cent of the population of the United States now have voluntary health insurance. Benefit payments in 1953 exceeded $2.5 billion, an increase of 20 per cent.

A "QUOTATION" WORTHY OF REPETITION

This statement was made by an Illinois colleague in 1882 —

> "The amenities of professional intercourse, and the obligations of medical men toward each other and the public, were perhaps better observed in 1850 than now. Then the doctor, next to the minister, was the trusted friend and counselor of every family to whom he ministered. He shared their joys, soothed their sorrows, and every passing year added to and cemented the attachment of affection between them. Now the doctor is regarded more in the light of a tradesman or mechanic and is employed from the same consideration that a grocer, tailor, or shoemaker is. The strong ties of gratitude and affection have almost ceased to exist. Relationship is now placed upon a mere commercial basis, and for this the profession is more to blame than the public."

MEDICAL EDUCATION AND LICENSURE

Almost 700 medical educators, practicing physicians and members of state medical boards and specialty boards attended the four-day meeting of the 51st Annual Congress on Medical Education and Licensure held February 5-8 at the Palmer House in Chicago, sponsored by the AMA Council on Medical Education and Hospitals, the Federation of State Medical Boards of the U. S. and the Advisory Board for Medical Specialties. Doctor Harry T. Southworth, First Vice President, and Doctor Maurice R. Richter, Secretary-Treasurer of your Arizona State Board of Medical Examiners were among those in attendance.

The Federation of State Medical Boards of the U. S., the Association of American Medical Colleges, the American Hospital Association and the AMA recommended adoption of a program which would put foreign trained physicians practicing in this country on the same level with American trained doctors. Final adoption of the proposed program now rests with the governing bodies of each of the four groups.

Under the plan, foreign-trained doctors, before they could practice in the United States, would have to take an examination in basic medical sciences and major clinical sciences. They would have to have at least 18 years of education, including 32 months in medicine, exclusive of time devoted to what is considered pre-medical or internship training here.

(Continued on Page 180)

The preliminary screening would be utilized to eliminate candidates who do not demonstrate adequate facility in the use of English and who do not give evidence of having reached the level of educational attainment, comparable to that of students in American schools at the time of graduation.

The federation approved in principle a draft of uniform medical practice act which contained recommendations for a definition of the practice of medicine, standards of eligibility or licensure, examinations, reciprocity and endorsement, grounds for probation, suspension, or revocation of licenses and forms for reciprocity and endorsement procedures; and adopted a resolution declaring that "the Federation of State Medical Boards insists on the present standards of educational competence and condemns the policy of appointing interns to hospital positions who are not graduates of accredited medical schools".

OSTEOPATHY — PROGRESS REPORT

On-campus observations of osteopathic colleges under the AMA committee chairmanship of past-president John W. Cline, M.D., San Francisco, is well underway. Colleges in Los Angeles, Des Moines and Chicago, as well as associated hospitals in Columbus, Detroit and Flint have been visited. Kansas City and Kirksville, Missouri, the latter osteopathic school first founded in 1892, were scheduled for visitation the week of February 27th and March 6th respectively.

ANNUAL MEETING— SCIENTIFIC SESSIONS

THE 64th Annual Meeting of your association will be held in Tucson, May 4-7, 1955, with headquarters at El Conquistador Hotel. Through arrangements made by the Scientific Assembly Committee, we are happy to announce participation of the following guest orators who will appear with others on the scientific sessions program.

Paul H. Case, M.D.

Receiving his Doctor of Medicine degree at George Washington School of Medicine in 1934, Doctor Paul H. Case completed a general rotating internship at Kansas City General Hospital and a residency in ophthalmology at the Massachusetts Eye and Ear Division of Massachusetts General Hospital. He is certified by the American Board of Ophthalmology; Fellow of the American College of Surgeons and holds membership in the American Academy of Ophthalmology and Otolaryngology, Pacific Coast Eye, Ear, Nose and Throat Society, American Medical Association, Arizona Medical Association, and Maricopa County Medical Society. Doctor Case is a staff member of St. Joseph's, Good Samaritan and Memorial Hospitals in Phoenix.

Michael J. Hogan, M.D.

Receiving his Bachelor of Arts degree in 1930 from the University of Utah and his Doctor of Medicine degree in 1942 from Cornell University Medical College, Doctor Michael J. Hogan served a surgical residency from 1933-35, an ophthalmological residence from 1938-40, research in ophthalmology from 1940-41. He was Assistant Clinical Professor from 1946-48 and Associate Clinical Professor from 1948-50 in ophthalmology, and Clinical Professor in Ophthalmology since 1951. He served as Supervisor of Francis I. Proctor Foundation for Research in Ophthalmology from 1948-50 and has served as its Director since 1951. Doctor Hogan is Vice Chairman of the Department of Ophthalmology of the University of California Medical School and is on the staff of the University of California, Franklin and Children's Hospitals. He is the

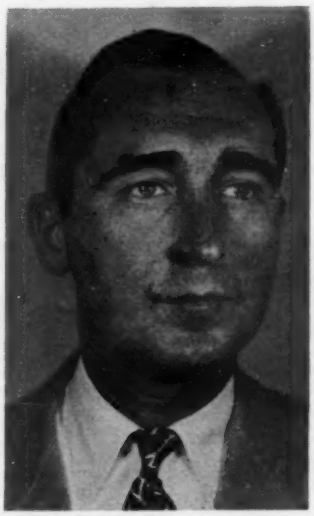
author of numerous medical publications and belongs to many local, state and national organizations.

Harry J. French, M.D.

Receiving his Doctor of Medicine degree at Tulane University, New Orleans, in 1920, Doctor Harry J. French completed a two-year internship at Charity General Hospital, likewise in New Orleans. Staff surgeon at Phelps Dodge Corporation hospital, Bisbee, in 1922-35, and engaged in private practice in that locality 1935-42. Entered Wills Eye Hospital, Philadelphia as a resident surgeon in 1942, graduating in 1944. Certified by the American Board of Ophthalmology in 1948, he has been engaged in private practice in Phoenix since 1946.

Oscar W. Thoeny, M.D.

Receiving his Bachelor of Arts degree from the University of Wisconsin and his Doctor of Medicine degree from the University of Minnesota in 1928, Doctor Oscar W. Thoeny completed post-graduate work in ophthalmology at the University of London, Royal Ophthalmic Hospital. Certified by the American Board of Ophthalmology. President of the Arizona Medical Association, past-president of the Maricopa County Medical Society, and former staff president of the St. Joseph's Hospital, Phoenix.



Paul E. McFarland, M.D.

Receiving his Bachelor of Science degree at Bucknell University and Doctor of Medicine degree at Jefferson Medical College, Doctor Paul E. McFarland completed a two-year internship in Pittsburgh, Pennsylvania and a one-year graduate course in ophthalmology at Washington University School of Medicine; also, two years at Wills Eye Hospital in Philadelphia. Certified by the American Board of Ophthalmology. Served five years in the U. S. Army and honorably discharged with the rank of Lt. Colonel.

Robert H. Alway, M.D.

Doctor Robert H. Alway received his Doctor of Medicine degree from the University of Minnesota School of Medicine, 1940. He was associated as a member of the faculty of the University of Utah from 1943 to 1949. In 1949 Doctor Alway joined the faculty staff of Stanford University and remained there until 1952. He has been Professor and Head of Pediatrics at the University of Colorado Medical Centre since 1953 and continues to date.

Interesting TOPICS

RECOMMENDED READING IN CURRENT MEDICAL JOURNALS

NEUROPSYCHIATRY. The July issue of The Nebraska State Medical Journal is a special issue on neuropsychiatry, with ten article on special phases of this important subject. (No, I have not read them. For any one interested "they went that'a way).

KIDNEY DISEASE. Basic Considerations in Management. Howard M. Odel, Rochester, Minn., Journ. of the Iowa State Med. Soc., August, 1954. This is a refreshing treatment of renal disease. By-passing all attempt at classification, the author stresses treatment, "the most practical branch of medicine" and discusses "four fundamental clinical manifestations of renal disease." These are anemia, edema, renal insufficiency and hypertension. Treatment of these conditions for which no specific therapy has yet been discovered requires chiefly patience and resource, but from the viewpoint of the patient, treatment is the most important of the medical art. Well worth a little trouble to look up and read.

DOCTORS AND SMOKING. Rosen, Schmukler and Welkind, Journ. of the Med. Soc. of New Jersey. These authors undertook a research involving the circularizing 5300 doctors practicing in New Jersey, with an elaborate questionnaire concerning their own smoking habits and the observed effects of these. They had replies from 1669 or 32% and present an analyses of these. Most doctors began smoking before 21 years of age. There were 60.8% smokers; 10.7% non-smokers, and 28.5% former smokers who had discontinued smoking. Former smokers increased with the age. The effects of smoking were chiefly in the respiratory tract, cough, postnasal drip, hawking, stuffiness of nose and expectoration. A significant group complained of fatigue as result of smoking. In general, most physicians feel that smoking produces symptoms. The sensory pleasures of smoking play a major part in the continuation of the habit, the greatest enjoyment seems to come in the "smoke" after meals.

HAWAII AND STATEHOOD — Ignorance or Prejudice? This reviewer having been for so long memory runneth not to the contrary, — a firm believer in statehood for Hawaii, was moved to a philosophic indignation over the delaying tactics of the microcephalic politicians in Washington, — by the perusal of the July-August issue of the Hawaii Medical Journal. The excellence of this journal will impress any one who reads it, and one can visualize the highly efficient medical organization which produces it, and back of them the community, industry and interesting fusion of nationalities which make up what ought, by any measurement we choose, to become the "State of Hawaii." It will be so when ignorance and prejudice cease to govern the actions or inactivities of Congress, allowing justice and reason to have their rightful way. A salute to the Hawaii Medical Association and their fine pournal!

GOLDEN JUBILEE OF "THE ANTISEPTIC." The Antiseptic, one of our exchange journals, is published at Madras, India. Its April issue is a very comprehensive volume of some 500 pages containing more than fifty articles. This is only slightly more than one-fourth of the articles contributed by eminent practitioners of India and other countries for the Golden Jubilee of the founding of this truly great journal. Some 125 articles are being held for publication in future issues of the journal. The Antiseptic was founded in 1904 by the now deceased Dr. U. Rama Rau. A son, Dr. U. Krishna Rau, took over the editorship upon the death of his father, and a grandson, Dr. U. Vasudeva Rau, is the present editor of The Antiseptic. "In its very first issue, it (The Antiseptic) envisaged the necessity for a united medical profession, for a General Medical Council for India and for a Medical Registration Act; and today we can congratulate ourselves that we have secured these ideals." This quotation from the "Foreword" editorial by Dr. Sir A. L. Mudaliar, M.D., LL.D., D.Sc., D.C.L., Vice Chancellor of Madras University, sorts the tone for this comprehensive review of the progress of medicine in India and throughout the world during the past fifty years. We add our congratulations to the hundreds received by The Antiseptic from confrers around the world.

PERIPHERAL VASCULAR DISEASE IN OLD AGE. E. J. Wayne, in Brit. Med. Journ., Sept. 25, 1954. More old people die from atherosclerosis and resultant occlusion of an important blood vessel than from any other cause. Treatment of senile obstructive arterial disease is directed towards (1) prevention of skin lesions and of gangrene by the avoidance of trauma, (2) the improvement of the blood supply to the tissues, (3) the relief of symptoms, and (4) the management of established gangrene. These measures are all discussed.

ANTICOAGULANTS IN CORONARY DISEASE. An excellent discussion of this subject by Gilchrist and Tulloch, in Brit. Med. Journ., Sept. 25, 1954. A disease of extremes, acute mycardial infarction runs a treacherous and unpredictable course. Anticoagulant drugs used early and efficiently, and continued for a minimum of four weeks under strict laboratory control, are capable of halving the death rate.

ARIZONA *Pharmaceutical* PAGE

PROFESSIONAL OBLIGATIONS

By Joseph A. Zapotocky, Ph.D.

College of Pharmacy, University of Arizona

A PRESCRIPTION reflects the diagnosis of a disease and the writing of the prescription may be the culmination of hours of examination and clinical testing. It should, therefore, be exact and explicit. The prescription is meant to carry instructions both to the pharmacist and to the patient, and the pharmacist is expected to interpret both of these. He must, therefore, understand the instructions which pertain to him and to interpret for the patient those directions which pertain to the patient. This may appear to be a very simple duty, but, at times, the prescription that seems to be so simple may cause the pharmacist to pause and reflect. Several physicians may write identical prescriptions, yet each physician may except the prescription to be filled in a different manner. As for example, in the preparation of an ophthalmic solution containing atropine sulfate, certan physicians may expect a solution of atropine sulfate in distilled water; some an isotonic solution or a solution made both isotonic and buffered; others a sterile solution; and still others may not be in agreement as to whether the solution should or should not be filtered. A few extra explicit words on the prescription blank can do away with the haze of doubt and permit the pharmacist to fill the prescription to the exact degree of perfection desired.

The pharmacist, during his formal course of education and practical training, becomes well versed in the physical and chemical properties of the drugs he dispenses. He is serving the physician and the patient best when he can make use of this information not only in compounding the prescription but in interpreting the directions of the doctor for the patient. Even if the physician has not already done so, should not the pharmacist again caution the patient about the importance of using water with highly alkaline drugs or with drugs which may form renal calculi though the prescription may contain no mention of water in the directions? Certain drugs are much less effective when taken during or immediately after meals, and if the directions for such a drug reads ambiguously, "two tablets three times daily" isn't it the pharmacist's duty to point out to the patient the advisability of taking such drugs on an empty stomach?

Does the pharmacist carry out his professional obligations if he merely copies the directions of the physician on the label without any comment about some property of the drug which modifies the effectiveness of that drug? Correct use of the drug will help to prevent doubts in the mind of the patient as to the accuracy of the diagnosis or the correct preparation of the drug when expected results are not forthcoming. Such information is just as important as advising a patient to store certain heat labile products in a refrigerator.

A number of drugs may cause coloration of the urine or skin, and the patient who has not been warned that his urine will turn red is in for quite a shock. If the patient has not been apprised of this fact, is it not the duty of the pharmacist to reveal this property to the patient and to stress the point that it is a normal effect of the medication? In conjunction with this line of thought, should not the pharmacist also caution the patient to report to the physician certain signs which may indicate toxicity?

The pharmacits is often referred to as the link between the physician and the patient. His special knowledge of drugs, if properly used, can add strength to this bond. Even today, when less than twenty per cent of the prescriptions require compounding, the pharmacist can still exhibit a great deal of professional skill if he has received the confidence of the physician.

Woman's AUXILIARY

History of the Woman's Auxiliary To The Arizona State Medical Association 1950-1955

Mrs. George S. Enfield, State Historian

THE PAST five years have brought us to our Silver Anniversary Year, 1955, and have added a great many new and worthwhile achivements to the history of the Woman's Auxiliary to the Arizona State Medical Association.

The number of organized counties, which stood for many years at three, then four, during 1951-52 rose to seven with the formation of auxiliaries in the counties of Graham, Pinal and Yuma. This was accomplished by the personal contact established through visits made by the state president, president-elect and organization chairman.

At the end of 1953, Graham County Auxiliary, which had started out so bravely and enthusiastically with the full support of their Medical Society, expired due to lack of numbers – their seven possible members having dwindled to four. However, during their brief span of activity they did a fine job of public relations and health education and as members-at-large are still carrying on.

Pinal County withdrew as an organized group in May 1954, because their membership of 12 was so scattered throughout the county that it was difficult to function as a unit. They also left a fine record of achievement and we hope that they will reorganize when they have more eligible members.

Yuma County has an enthusiastic group of 21 members, several of whom are active on the state board. They have done splendid PR and health education work in Audiometer testing, nurse recruitment and future nurses clubs. They also made the National TODAY'S HEALTH "More Exclusive" club in 1954 by overselling their quota by 269%. A wonderful record for a new auxiliary!

The four "old" auxiliaries, Maricopa, Gila, Pima, and Yavapai have carried on their work each year showing ever-increasing progress in all phases of the auxiliary program.

Our membership during the past five years has risen steadily from 347 in 1950 to over 470 in 1955. The wives of doctors in unorganized counties have been encouraged to join us as members-at-large. In order that they might be kept informed about the auxiliary and its work and thus feel that they were a part of the group, a NEWSLETTER was published for the first time in 1951 by the state organization and membership chairman. Three issues of one hundred copies each were sent to these women only. The following year the state board voted to send the NEWSLETTER to every doctor's wife in the state, the national auxiliary officers and to presidents of other state auxiliaries. Seven hundred copies of each of the three yearly issues are now mailed. The newsletter was christened "THE MAIL BOX" in 1955.

The House of Delegates of the Arizona Medical Association, in 1951, raised their financial grant of $500 to $1,000 yearly to underwrite the Auxiliary's increased public relations and health education program, thus demonstrating their approval of and cooperation with our fight against Socialized Medicine and adverse Medical Legislation, or Nurse Recruitment and Health Radio Programs and other projects.

For the past four years we have paid the way of the president-elect to the national conference in Chicago and that of the president for the past two years. It has been felt that the money was well spent since the ideas and inspiration received by them at conference from the national officers and other state auxiliary officers is later transfused into our own state groups.

The Student Nurse Loan Fund, which was established at the 1949 convention, granted loans to the first two girls in 1950. In the past five years 22 girls have received the loan, six of whom have graduated and fully repaid the amount borrowed. This fund is now able through the dollar per year per member, to increase, not only the number of loans granted each year, but also the amount of the loan from $300 to $400 in line with the increased cost of nursing education. The planners of this loan fund did a masterly piece of work. The format has been used as the pattern for many similar loan funds in other state auxiliaries and lay organizations.

The formation of Future Nurses Clubs has been wide-spread throughout the state follow-

ing the beginning of the intensive Nurse Recruitment Program in 1951. Clubs in elementary and high schools help to acquaint young girls with the opportunities of a nursing career and with the need for trained nurses. The nurse recruitment program has helped to increase the enrollment in the three accredited nursing schools in the state and to interest a higher type, better educated girl in taking up nursing as her life work. In 1954, a joint committee consisting of members from the state nurses association and the state medical auxiliary was formed. This committee makes it possible for a fine and united program to be carried on throughout the whole state.

In 1954, we were urged by national to give special attention to the mental health problem in our community. Maricopa County's mental health chairman was asked to sit in on a planning committee which set-up the Maricopa Mental Health Association. A child guidance clinic was started by this group and the Maricopa Auxiliary raised $2,852.50 toward its support in 1954-55. Tucson has had a child guidance clinic for three years and many of the Pima auxiliary members are volunteer workers in it.

Civil Defense and American Medical Education Foundation have been actively helped by members of the auxiliary. However, they should both be given a more important place in our planning since the one has the safety of our future lives as its goal and the other the future freedom of our medical schools. Both are of utmost importance to the doctor and his family.

Pima county has sponsored a children's health radio program called "Healthy Living in our Country" for four successful years. The electrical transcriptions furnished by the educational burea of the AMA have been furnished to radio stations in several counties.

All counties have given generously each year to the various health and welfare drives. Yavapai county raises several thousands of dollars each year at their Christmas Ball for their county hospital. The doctor's wife is ever ready to help when called upon to serve her community.

TODAY'S HEALTH subscriptions in Arizona have reached a new record every year. In 1954, a high of 468 subscriptions or 643 points boosted us into first place among the states that have 400 to 1000 members. A $40 check was presented to our president at the 1954 AMA convention in San Francisco.

The Bulletin has not fared so well in the past five years. Only 82 subscriptions were sold in 1954. This magazine is a MUST for all officers and committee chairmen, as it is a source book on the "know how" of her job.

The State Constitution was revised during 1953-54 and was accepted at the general session of the 1954 convention in Chandler. It was printed in early 1955.

A school in instruction was held for the first time at the 1954 convention and will be held again at the 1955 convention. A manuel of important information was compiled for this meeting by the program chairman and president. This will be added to from time to time to keep it up-to-date as a working manuel for our state officers and committee chairmen.

Arizona auxiliary was presented a state president's pin by Mrs. William Schoffman at the end of her year in office (1953). It is a silver shield in the shape of the state. It first was inscribed with only the letters AMA but in 1954 it was decided to have the full name "The Woman's Auxiliary to the Arizona Medical Association" inscribed around the state plant, a Sahuaro cactus. This beautiful pin is passed from president to president.

The members of the Woman's Auxiliary to the Arizona Medical Association can be very proud to have had a part in its splendid growth. Our progress and achievement during our 25 years stands up well in comparison with larger groups. Let us continue to keep it that way and may the next 25 years be even better than the 25 just passed.

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